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a case study of United Kingdom, Germany and Poland**

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**Toward a reconciled and integrated EU Emissions Trading Scheme? A case study
of United Kingdom, Germany and Poland**

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A thesis submitted for the degree of Doctor of Philosophy

University of Bath

Department of Politics, Languages and International Studies

January 2017

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Abstract

Since the EU-ETS was placed at the centre of EU climate governance in 2003, its influence has not been restricted to environmental policy but has spread to the economic and political domains. But its implementation remains blocked even after the EU revised it by the Climate and Energy Package (CEP). The larger problem is, the ‘East-West’ split toward the revised EU-ETS triggered by the ambitious but ‘missions complicated’ CEP and diffused to energy governance, which put EU's climate governance into the deadlock (Wettestad, 2014). Skjærseth and Wettestad (2009, 2010) argued that the revised EU-ETS could be the result of the changing MS’ preferences, but they did not unpack these preferences formulated during the EU-ETS implementation.

This thesis fills the gap by reinvestigating the EU-ETS implementation to identify what the domestic contextual factors are and how they affect and reshape MS’ preferences to the EU-ETS. By applying the five stage policy-making cycle and the multilevel governance (MLG) in this study, it is concluded that the difficulty of fixing the EU-ETS is not merely limited to the revised climate governance structure, but also the need to reconcile MS’ energy-economic structures and coordinate with their climate and energy policy. To solve the MS’ problem of ‘asymmetrical energy-economic interests’, it is vital for the EU to improve the cross-level reconciliation between the EU-ETS and national energy policies and to increase the coordination between policy instruments when reforming the EU’s climate governance structure. The EU-ETS development encourages both national and EU’s climate governance structures to fall in line with MLG concepts (flexible design and more jurisdictional levels involved in the policy network). Therefore, it has become the turning point of European integration, by which the traditional dichotomy between ‘top-down’ and ‘bottom-up’ integration starts transitioning to the ‘two-way reconciliation.’

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Abbreviation List

2030 Framework: 2030 Climate and Energy Framework

AAUs: Assigned Amount Units

ACBE: the Advisory Committee on Business and the Environment

BASF: Badische Anilin- & Soda-Fabrik

BAU: Business-As-Usual

BDI: Bundesverband der Deutschen Industrie

BfN: the Federal Agency for Nature Conservation (German: Bundesamt für Naturschutz)

BfS: the Federal Office for Radiation Protection (German: Bundesamt für Strahlenschutz)

BMUB: the Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety (German: Das Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit)

BMWi: the Federal Ministry of Economics and Technology (German: Bundesministerium für Wirtschaft und Energie)

BSA: Burden Sharing Agreement

CAN: Climate Action Network Europe

CAP2020: Climate Action Programme 2020

CAT: Cap-and-Trade

CCAs: Climate Change Agreements

CCC: Committee of Energy and Climate Change

CCL: Climate Change Levy

CCPR: Climate Change Programme Review

CCS: Carbon Capture and Storage

CDM: Clean Development Mechanism

CDU: Christian Democratic Union of Germany (German: Christlich Demokratische Union Deutschlands)

CEECs: Central and Eastern European Countries

CEEP: Central Europe Energy Partners

CEFIC: European Chemical Industry Council

CEP: Climate and Energy Package

CEUs: Certified Emission Reductions

CFSP: Common Foreign and Security Policy

CH₄: Methane

CHP: Combined Heat and Power sector

CO₂: Carbon Dioxide

COMECON: the Council for Mutual Economic Assistance

COP: Conference of the Parties

CPF: the Carbon Price Floor

CPSR: Carbon Price Support Rate

CSU: Christian Social Union in Bavaria (German: Christlich-Soziale Union in Bayern)

CTIL: the Community Independent Transaction Log

DECC: Department of Energy and Climate Change

Defra: Department for Environment, Food and Rural Affairs

DEHSt: the German Emissions Trading Authority (German: Deutsche Emissionshandelsstelle)

DG Environment: Directorate General for Environment

DSOs: Distribution System Operators

DTI: Department of Trade and Industry

EAA: European Aluminum Association

EAPs: Environmental Action Plans

ECCPs: European Climate Change Programmes

ECJ: European Court of Justice

Eco-tax: ecological tax

EEA: European Economic Area

EEC: the Treaty establishing the European Economic Community

EEX: European Energy Exchange

EGS: Environmental Goods and Services

EHV 2020: Emissions Trading Regulation 2020 (German: Emissionshandelsverordnung 2020)

EITs: Economies in Transition

EKF: Special Energy and Climate Fund (German: Energie- und Klimafonds)

EMA: the Emission Management Act

ENGOS: Environmental Non-Governmental Organization

ENVI: the Environment, Public Health and Food Safety Committee

EPP2030: the Energy Policy of Poland until 2030

ERC: Emissions Reduction Credit

ERUs: Emission Reduction Units

ESD: the Effort-Sharing Directive 406/2006/EC

ETA: the Emission Trading Act

EU: European Union

EUA: EU allowance

EU-ETS: European Union Emissions Trading Scheme

FDP: The Free Democratic Party (German: Freie Demokratische Partei)

FIELD: the Foundation for International Environmental Law and Development

FITs: feed-in tariffs

GDP: Gross Domestic Product

GHG: Greenhouse gas

GIS: Green Investment Scheme

GW: Gigawatt

HFCs: Hydrofluorocarbons

High Level Group: the High Level Group on Competitiveness, Energy and Environment

ICAO: the International Civil Aviation Organization

IEA: International Energy Agency

IMA: Inter-ministerial Committee on CO₂ Reduction

IMF: International Monetary Fund

ITRE: the Industry, Research and Energy Committee

JI: Joint Implementation

KASHUE: National Administrator of the Emissions Trading System

KOBiZE: the National Centre for Emissions Management in Poland

KP: Kyoto Protocol

LEP: Large Electricity Producers

LI: Liberal Intergovernmentalism

LPR: League of Polish Families (Polish: Liga Polskich Rodzin)

LULUCF: Land Use, Land-Use Change and Forestry

MBMs: market-based mechanisms

MEG Act: the Management of Emission of Greenhouse Gases and Other Substances

MLG: Multi-level Governance

MS: Member States

MSR: Market Stability Reserve

Mt: Million tonnes

MtCO_{2e}: Metric Tonnes Carbon Dioxide Equivalent

MW: Megawatt

MWh: Megawatt hour

N₂O: Nitrous Oxide

NAETS: the National Administrator of the Emissions Trading System

NAO: National Audit Office

NAPs: National Allocation Plans

NCP: the National Climate Policy

NER: the New Entrant Reserve

NFOSiGW: the National Fund for Environmental Protection and Water Management

NGOs: Non-Governmental Organisations

NGS: New Government System

NI: National Insurance

NIMs: National Implementation Measures

NO: Nitrogen Oxide and nitrogen monoxide

OECD: Organization for Economic Cooperation and Development

ONS: Office for National Statistics

OPEC: Organisation of Petroleum Exporting Countries

PCP: POLAND'S CLIMATE POLICY: the strategies for greenhouse gas emission reductions in Poland until 2020

PFCs: Perfluorocarbons

PKEE: the Polish Electricity Association

PPP: polluter pays principle

PSL: Polish People's Party (Polish: Polskie Stronnictwo Ludowe)

QELRCs: Quantified Emission Limitation and Reduction Commitments

QMV: Qualified Majority Voting

RECLAIM: Regional Clean Air Incentives Market programme of California

REIO: Regional Economic Integration Organization

RES: Renewable Energy Directive 2009/28/EC

RES: Renewable Energy Strategies

RIA: Regulatory Impact Assessment

SEA: Single European Act

SF₆: Sulfur hexafluoride

SO₂: Sulfur Dioxide

SO_x: Sulfur Oxides

SPD: the Social Democratic Party of Germany (German: Sozialdemokratische Partei Deutschlands)

SRP: Self-defence of the Republic of Poland (Polish: Samoobrona Rzeczpospolitej Polskiej)

TEHG: Greenhouse Gas Emission Trading Act (German: Treibhausgas-Emissionshandelsgesetz)

TEPs: tradable emissions permits

TEU: Treaty on European Union

TFEU: Treaty on the Functioning of the European Union

The Commission: the European Commission

The Council: the European Council

The Parliament: the European Parliament

TPEC: the total primary energy consumption

TPES: the total primary energy supply

UBA: the Federal Environment Agency (German: Umweltbundesamt)

UK: United Kingdom

UK-ETS: United Kingdom-Emissions Trading Scheme

UNCTAD: United Nations Conference on Trade and Development

UNFCCC: United Nations Framework Convention on Climate Change

UP: Labour Union (Polish: Unia Pracy)

US: the United States

VAs: Volunteer Agreements

VET: Verified Emissions Tables

WFF: World Wide Fund for Nature

WG: Working Groups

WG1: the first Working Group

WTO: World Trade Organization

ZuG 2007: the Allocation Act 2007 (German: Zuteilungsgesetz 2007)

ZuG 2012: the 2012 Allocation Act (German: Zuteilungsgesetz 2012)

ZuV 2020: the Allocation Ordinance 2020 (German: Zuteilungsverordnung 2020)

Chapter 1 Introduction

1.1 Research Aims and Objectives

Since the European Union's Emissions Trading Scheme (EU-ETS) was given a central role in the EU's climate policy to reduce greenhouse gas (GHG) emissions, the effectiveness and efficiency of the EU-ETS have been examined by many scholars (e.g., Wettestad, 2008, 2009 Borghesi, Hagberg and Roth, 2010; Muuls and Wanger, 2011; Cainelli and Mazzanti, 2012; Calel and Dechezlepretre, 2012; de Preux and Wagner, 2012). The unique structure and the 'actorness' of the EU, which is composed of 28 traditional nation states through a 'principal-and-agent' delegation process, have clearly complicated the design, implementation and revision of the EU-ETS, and this has led to several multidimensional conflicts and cross-level problems in the first and second phases of the EU-ETS's implementation. While revisions have been made to the EU-ETS, such as the Climate and Energy Package (CEP) in 2008 and the 2030 Climate and Energy Framework in 2014, there is still much scepticism about the scheme's efficiency. The global economic crisis that took place in between these two revisions also had a significant impact on EU member states' attitudes towards the EU's climate policies and, of course, the EU-ETS revisions.

Yet, regardless of these policy revisions and the economic crisis, the EU-ETS has not only retained its increasing influence on all stakeholders, including EU institutions, member states (MS) and regulated industries, but has also put increasing pressure on the existing structure of EU's climate governance. Since the CEP revision in 2008, climate negotiations at the EU level have adopted a 'package' approach in an attempt to increase 'joint gains' and enable greater political feasibility. However, some researchers have disagreed with this direction, pointing out that an 'East-West' split emerged in the EU climate policy negotiations after 2008 and became even worse after the economic crisis (Skovgarrrd, 2014). It seems likely that the package approach has only limited political feasibility in the short term – the so-called 'joint gains' did not last long, the revised EU-ETS implementation continued to be problematic and the carbon price stayed too low to be effective as the economic incentive it theoretically presumed to be in the emissions trading approach. Even worse was that issues related to renewable energy, energy efficiency and the 2008 CEP revision triggered some MS concerns regarding national energy security after the economic crisis. Over time, all of these complications developed into a bottleneck and blocked any potential impact from

the revised EU-ETS.

More specifically, the series of EU-ETS developments and revisions started to change the pace – and even challenged the initial understanding – of European integration, and whether the current governance structure can keep pace with the ability of the EU's common market to operate an effective EU-ETS is being questioned by many. Therefore, this study aims to examine the remaining obstacles by looking into MS' domestic contextual factors and preference changes during their EU-ETS implementation process. There are three primary aims to this study: i) to make the EU-ETS more effective and efficient in reducing GHG emissions, ii) to determine how and why EU-ETS implementation has affected European integration and iii) to find out what role the EU-ETS plays in European integration.

To evaluate the efficiency of the EU-ETS and determine how its weaknesses can be addressed, this research identifies and investigates the causal factors (and main actors) which have either improved or blocked the effectiveness and efficiency of the EU-ETS. This study also examines whether the synergies/conflicts formed when MS implement both a national climate policy and the EU-ETS may, in turn, affect EU-ETS revisions at the EU level. Finally, this paper seeks to discover what issues can be attributed to MS national preferences (either synergies or conflicts) and whether they affect the distinctive role of the EU-ETS in European integration and should therefore be taken into consideration during the current EU-ETS revision process.

This thesis therefore proposes the following objectives:

- To refine the policy design of the EU-ETS by analysing the theoretical design of the ETS and highlighting the impact of European integration on the initiation of the EU-ETS, both of which have broadly affected the EU-ETS in the beginning stage of Europeanisation;
- To further investigate what and how MS' inherent contextual factors influence their position towards the EU-ETS and lead to synergies or conflicts that arise when they implement the EU-ETS, as well as to analyse national climate policies in relation to the centralised EU-ETS by looking at three case studies, the United Kingdom, Germany and Poland;
- To identify the latest approaches for 'fixing' the EU-ETS and the role that the EU-ETS plays in European integration by summing up targeted MS'

inconsistent awareness and need of the EU-ETS in relation to corresponding domestic contextual factors.

1.2 Research Questions

Based on the research topic and research aims and objectives described above, a core research question clearly emerges: Has EU-ETS implementation has not only affected MS' national preferences but also made the structure of EU's climate governance more unstable in the context of EU integration? This question can be further divided into several sub-questions, which are as follows:

1. What contextual factors compose national preferences and how are they prioritised when MS seek to implement both national climate policies and the EU-ETS?
2. Does MS' prioritisation of these contextual factors lead to synergies or conflicts between their own policies and EU-ETS implementation?
3. Is it possible for the EU to resolve these conflicts or strengthen these synergies within the EU's climate governance structure by revising the EU-ETS, which, in turn, may contribute to a more efficient and integrated EU climate governance?

1.3 Research Methodology

Walti (2010) has pointed out that due to the nature of environmental problems, the targeted actors in environmental policies and the globalisation of environmental problems, the environmental policy expansion process of the EU strongly coincides with the development of a multilevel governance (MLG) arrangement. At the same time, Jachtenfuchs (2010) has claimed that the strengthening of the special 'actorness' of the EU has also made its multilevel system special. The high heterogeneity among the EU's 28 MS has caused the European integration process to be slower, rockier and more complex than expected. Like other environmental policies in the EU, the ETS has been quickly internalised, reshaped and reconstructed in the background, while politics and the economy have taken centre stage in recent years. However, the purpose of creating an ETS within the EU has not been purely for the sake of solving environmental issues but has also been related to reaching a compromise between the EU's political and economic platforms, both internally and externally.

Since the EU-ETS was first developed and implemented in 2005, it has received a

lot of attention from academia to industry and from political science to economy or even technical innovations. As Wettestad (2009, 2014) has summed up the indication raised by both CEPS (2002) and Kruger and Pizer (2004), creating an ETS within the EU has not only changed the EU's environmental governance through this 'new grand experiment', but has also raised many issues beyond climate politics under the EU's governance. According to the many articles that have assessed EU-ETS implementation, the standards that are widely applied can be classified into four types: abatement results, innovation results, economic performance and effect on electricity prices. In addition, there are four analytical levels used in these articles to examine EU-ETS implementation: (1) among states within the EU (Anger and Oberndorfer, 2008; Martin, Muuls and Wanger, 2011; Martin, Muuls, de Preux and Wagner, 2012; Wettestad, 2008, 2009); (2) EU MS compared with non-EU states (De Bruyn, Markowska, de Jong and Bles, 2008); (3) among ETS sectors (Alexeeva–Talebi, 2011; Borghesi et al., 2012; Calel and Dechezlepretre, 2012; Egenhofer, Georgiev and Fujiwara, 2011; Hagberg and Roth, 2010; Reinaud, 2008); and (4) between ETS sectors and non-ETS sectors (Calel et al., 2011; Calel and Dechezlepretre, 2012).

This thesis mainly focuses on the work of Wettestad (2008, 2009 and 2014) and Skjærseth and Wettestad (2008a, 2008b, 2009 and 2010), in which the focus is on analysing the EU-ETS's abatement results and its political effects on the EU and MS. These researchers all concentrate on tracking the initial development, implementation and revision of the EU-ETS according to two major European integration theories, liberal intergovernmentalism (LI) and MLG. Although they also include the influence of international regimes in some of their work, they all argue that the EU-ETS reforms have not been made in response to changes in international regimes, but rather have been attempts to encourage and influence the climate negotiations of international regimes (Skjærseth and Wettestad, 2009; Wettestad, 2008).

Skjærseth and Wettestad (2009, 2010) have argued that the 2008 CEP revision could have been the result of changing MS positions (preferences) regarding the EU-ETS after its trial implementation, which is in line with LI. However, after assessing this theory, they decided that not all of the outcomes from the 2008 revision could be fully explained by MS' changing positions. Thus, they turned their focus to understanding the process of the MS' changing positions to find out what other factors might not only affect their changing positions, but also influence the trend for revising the EU-ETS within the overall EU climate structure by applying MLG.

Although it is clear that EU sovereign states' interests and positions continue to be determining forces for EU policy-making and negotiation processes, there is a growing tendency to emphasise the 'trialogue' procedure at the EU level. This can be clearly seen in the years since the CEP was adopted (Wettestad, 2014). In addition, the influence of cross-level non-government actors (e.g., industry unions represented at the EU level, like Eurelectric) has grown in recent years; these actors have actively participated in the EU-ETS developmental process and, to an extent, have affected the shifting and/or adjusting of MS' positions. All in all, the difficulty of reaching agreements when more cross-level actors are involved in EU-ETS revisions is increasing, which is reflected in the package approach in 2008.

Skjærseth and Wettestad (2010) suggested that the package approach in 2008 would benefit the negotiations between rich and poor MS. Nevertheless, by investigating certain influential MS (i.e., the United Kingdom, Germany and Poland), Wettestad (2014) re-affirmed that the package approach had become a mission complicated by sensitive issues linked to energy. The positions that the MS changed on seemed to conflict with each other, and more issues than resolutions were triggered by the 2008 reform. However, Wettestad (2014) did not further analyse the related synergies or conflicts in these selected MS' EU-ETS implementation and the influence they had on the EU climate governance structure. Thus, to provide a more comprehensive and profound analysis of this quandary, this thesis follows the path laid out by Skjærseth and Wettestad, filling the gaps in their findings by applying a five-stage policy-making process and using MLG as a supplementary tool to examine the MS identified as crucial to EU-level policy making, namely the United Kingdom, Germany and Poland. The details of the research design and how this study has applied MLG will be further described in chapter 3.

1.4 Potential Contributions and Limitations

This thesis is expected to make contributions to the current knowledge in at least two fields. Firstly, from the point of implementing a market-based policy instrument like the EU-ETS, it seeks:

- to clarify and improve the understanding of EU-ETS performance to date; and

- to supply a constructive analysis of EU-ETS policy shortcomings and the elements of its success by unpacking the ‘national preferences’ involved in and affecting the EU-ETS.

Secondly, within the context of European integration, this thesis is expected:

- to identify the influence and role of EU-ETS implementation in EU’s integration;
- to identify another possible direction for resolution based on the concept of *reconciliation* to improve the performance of the EU-ETS; and
- to widen the feasibility of integration theories for examining the EU-ETS by clarifying the potential roles that MS play in MLG.

Since this study is designed to unpack the contextual factors that are hidden beneath the broader cover of ‘national preferences’ when these factors have significantly affected MS’ positions and actions in relation to the EU-ETS, certain limitations must be noted as well. Firstly, the results might be limited to the selected case studies. Although the representativeness and the importance of the targeted MS are carefully listed and recorded, findings from these three targeted MS can only serve as part of a solution to fixing any problems inherent in the EU-ETS in the context of EU climate governance. It may be possible, however, that the same contextual factors have formed different national preferences among the remaining MS. This study intends to serve as a preliminary and tentative exploration that will need further development and refinement. Therefore, future research and case studies targeting other MS’ implementation of EU-ETS are significantly needed.

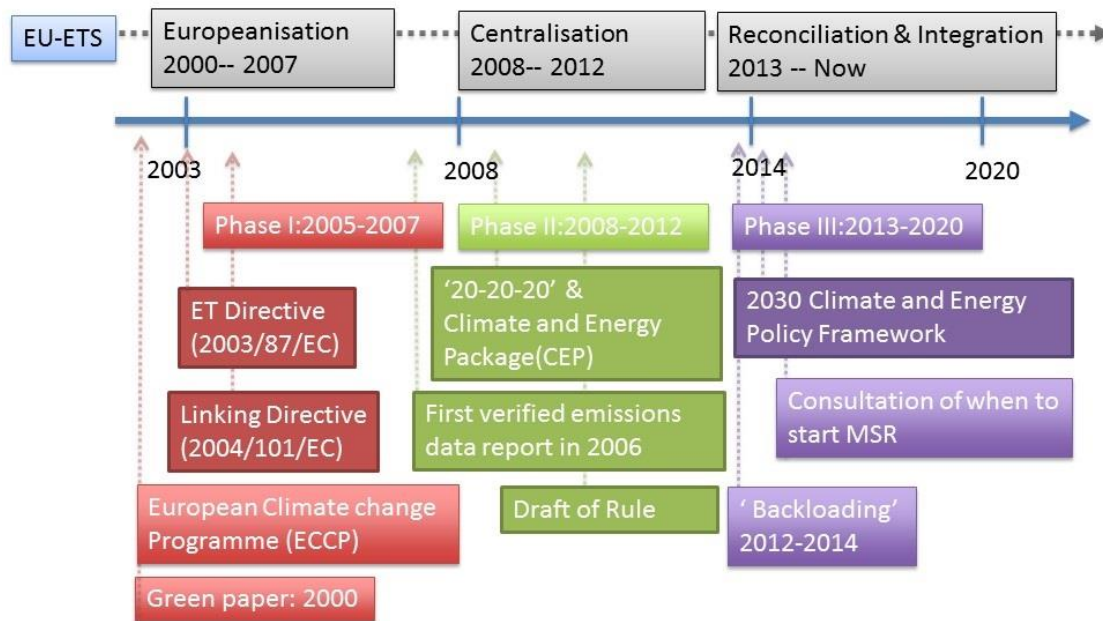
Secondly, as mentioned before, while this thesis mainly refers to the work of Skjærseth and Wettstad, it is cautiously designed to narrow down its scale of observation to focus on the interaction between EU institutions and the targeted MS only in relation to EU-ETS implementation. However, external influences (e.g., global climate negotiations and agreements and non-EU countries’ decisions and actions in the global carbon market) can also significantly affect MS’ – and even EU institutions’ – reactions to EU-ETS revisions. An example of this is the link between the EU allowances market and the international credits of the Kyoto flexible mechanisms by the Linking Directive. However, the EU has already clarified that these international credits will be strictly limited to ETS sectors’ GHG emissions reduction starting in the third phase of the scheme. This can be interpreted as an attempt by the EU to minimise

further uncertainties regarding the impact of the negotiation and development of the international credits market on the EU carbon market. Although the EU-ETS revisions and the EU's climate target negotiations have long been closely linked to its desire to embody a global climate leadership role, the EU has been clearly aware that without fixing the EU-ETS 'internally', its desire for this leadership position might not be secure and/or affirmed. Therefore, this study focuses on the politics and policy analysis perspectives to examine how EU MS base on their contextual factors to utilise these external influences and factors when negotiating EU-ETS revisions at the EU level.

The third limitation comes from the uncertainty over the ongoing EU-ETS revisions and other political factors both within and without the EU. Due to time and energy limitations for completing this study, the literature review and data collection process has been limited to up to the 2030 Climate and Energy Policy Framework adopted in 2014. Therefore, the uncertainty and potential influence of any factors occurring after this time point (such as Brexit, which took place in June 2016) are unfortunately not addressed. Also, although 195 countries adopted the first-ever universal, legally binding global climate deal at the Paris climate conference (COP21) in December 2015, huge uncertainties will remain until this agreement comes into force in 2020. This study only briefly addresses the EU's signing of the Paris Agreement and not its ratification. However, these political factors will definitely have a significant impact on future EU-ETS revisions and development. Therefore, ongoing research on these topics is clearly needed.

1.5 Thesis Structure

To organise the aims, objectives and research questions mentioned in this chapter, this thesis divides the evolution of the EU-ETS into three stages: i) Europeanisation, ii) Centralisation and iii) Reconciliation and Integration. As can be seen in Graph 1, each stage is distinguished by legal texts that served as significant turning points. The first stage (i.e., Europeanisation) started with the Green Paper in 2000, which emphasised reshaping the theoretical ETS due to the EU's need for integration and getting practical experience from policy implementation, and continued to 2007. Then, in 2008, the CEP marks the start of the second stage (i.e., Centralisation), which ended in 2012. The third stage (i.e., Reconciliation and Integration) began in 2013, when the European Council drafted the 2030 Framework, and continued to its adoption in October 2014.



Graph 1. Time frame of this thesis.

Before further addressing how and why each of these stages can be conceptualised in this way in chapter 3, chapter 2 will provide a history of emissions trading development both theoretically and empirically. Chapter 2 will also address the reasons for and the process of European integration in EU's climate policy, as well as how it affected the design of the EU-ETS.

Therefore, after demonstrating the emergence of emissions trading in climate governance, chapter 2 will identify the incentives (both externally and internally) that motivated the EU to change its position from an opponent to a pioneer and advocator of implementing emissions trading in its climate governance. Moreover, this chapter will analyse how the emissions trading approach was 'Europeanised' into the EU's governance structure, followed by a review of the general EU-ETS implementation and an explanation of problems and collapses in the revised EU-ETS and how these obstacles can serve as signs that the current EU climate governance structure is insufficient to support EU-ETS development.

Based on the literature review in chapter 2, chapter 3 will lay out the research design for this thesis, including macro-level and micro-level analytical frameworks. At the macro-level, an analytical framework is used to explain and conceptualise the time frame for this study (as displayed in Graph 1). Then, based on the macro-level time frame, a micro-level analytical framework utilises the same analytical structure to analyse each case study by applying a five-step policy-making process supplemented

by MLG.

Chapters 4 to 6 lay out the three case studies; each case study is analysed to determine the various effects and/or conflicts that the centralised EU-ETS policy design brought to that MS' EU-ETS implementation. This research is based on the belief that these conflicts are caused by different national preferences, which are composed of and shaped by a series of domestic contextual factors when implementing both national climate plans and the EU-ETS. More importantly, the EU-ETS implementation also influences MS and all stakeholders to reprioritise domestic contextual factors and then reshape the MS' positions and preferences before adopting EU-ETS reforms. All these contextual factors, re-prioritisations and preferences of MS not only block the revised EU-ETS implementations but also weaken the steadiness and effectiveness of the EU's climate governance structure.

Lastly, chapter 7 provides the conclusion for this thesis. Based on the findings from each case study, the research questions will be answered by summarising what domestic contextual factors are essential not only for national preference formulation, but also for EU-ETS implementation. Then the different reactions and preferences formed by the targeted countries' contextual factors toward the EU-ETS revisions will be also addressed, followed by a summary and interpretation of what these different reactions (either synergies or conflicts) and preferences mean for EU-ETS revisions within the governance structure of EU integration, particularly how and why 'reconciliation' has become such a crucial concept for building a policy network for further revising the EU-ETS.

Chapter 2 Literature Review

Conceptualising Emissions Trading in the European Union: from ‘Europeanisation’ to ‘Centralisation’

Introduction

Since the European Union Emissions Trading Scheme (EU-ETS) started functioning in 2005, it has emerged as the largest emissions trading market, crossing the traditional borders between 28 MS and covering at least 11,500 power and industrial plants (Parker, 2008; Wrake et al, 2012). It is believed that there are more than 500 million people involved in and affected by the EU-ETS implementation in total (Wrake et al, 2012). As a whole, it covers approximately 45% of total GHG in the EU and it is expected to curb the EU’s GHG emissions in the long term with the help of its market-based power. But, taking the scope of the targeted industries that the EU-ETS contains into consideration, it may also be seen as an energy policy. Thus, the New Environmental Policy Instruments (NEPIs) with market-based features, such as the EU-ETS, present a great challenge for academic research (Bailey and Rupp, 2004; Bailey, 2005). From the issue-specific perspective, Lees (2007) argued, environmental policy has, therefore, become a ‘trans-boundary’ policy domain and further created a tension in the dominant mode of governance, which remains composed of nation states. From the EU development and integration perspective, it has transformed into a complex, multilevel system of governance that has exerted a significant influence on its MS’ environmental policies (Benson and Jordan, 2010). Under this circumstance, it is not surprising that the complex of the ‘actorness’ of the EU and the wide flexible design of market-based emissions trading have aroused broad discussion in recent years. Because both of them have resulted in a series of obstacles in the EU’s climate governance, which has slowed down EU’s progress to becoming a low-carbon economy in the long term.

With the similar purpose of unpacking this complicated mix of obstacles that have blocked the EU’s attempts to become a low-carbon economy and to take the lead in global climate governance, this thesis starts by tracing the history of the EU-ETS within the EU. More explicitly, it contains three major parts to further look into the EU-ETS development. The first part is to deconstruct from definitions in economic textbooks, the causes and major components of emissions trading, which might have affected the EU-style emissions trading formulation later. The second part is to unpack

how and why the EU's 'actorness' gradually made its EU-ETS development more complicated through both its internal integration need and the close link to global climate negotiations. Both of these provide in-depth knowledge and historical background to the EU-ETS, which gives a comprehensive foundation to the research design that is built in Chapter 3. After that, the third part starts putting the EU and the emissions trading approach together by addressing how the EU utilised and implemented its EU-ETS to pursue its leadership in climate governance, both internally and externally. So the sequence will follow chronology to further conceptualise i) emissions trading; ii) Europeanised emissions trading, i.e. EU-ETS; and iii) centralised EU-ETS and iv) the EU-ETS in the Reconciliation and integration stage. This may help to understand what analytical framework and theoretical structure are designed and why.

Thus, the structure of this chapter is as follows. Firstly, this chapter conceptualises how the emissions trading approach became the core focus of climate governance, both from the theoretical and the empirical perspective. Secondly, it will go on to explore how and why the EU changed its position from a skeptical opponent to a pioneer and an advocate of emissions trading; here, the development of 'Europeanised' emissions trading (2000-2007) will be further examined and identified. Thirdly, after identifying the plausible problems that blocked the first phase of EU-ETS implementation until 2007, the chapter will demonstrate how the EU tried to reform the EU-ETS, which pushed the EU-ETS into the second stage, i.e. the Centralisation stage (2008-2012). Finally, by comparing EU-ETS implementation between phases I and II, this chapter intends to identify the gaps remaining in the centralised EU-ETS and point out that merely centralising the EU-ETS is insufficient to realise the expected efficiency of emissions trading implementation in the EU. Fourthly, the chapter also addresses how the latest EU-ETS revision has developed and triggered pressure on the governance structures at both the EU level and the state level. Lastly, the discussion will sum up the literature review.

2.1 The Emergence of Emissions Trading in Climate Policy

2.1.1 Collective action problems between economy and the environment

The climate change issue that has entered the international political arena can be traced back to the 1970s. The long development of laissez-faire economics, industrial capitalism and technological modernisation not only dramatically improved human living standards but also brought some serious environmental issues, including acid rain, holes in the ozone layer, and climate change associated with global warming and extreme temperatures. Linked to the latter, GHG emission has also become a feature of the modern economy (Spash, 2010). Although the oil crisis in the late 1970s caused environmental problems to temporally recede from public focus, these problems have continued to mount and gradually threaten the continuity of civilised society.

In the 1980s and early 1990s, because of climate change and the greenhouse effect together with problems like acid rain, hazardous waste sites and ground-water contamination, environmental problems rose in prominence to become a global issue (Hanf & Jansen, 1998). Eventually, these environmental problems, especially climate change and the need for GHG reduction, became the triggers for breaching the political borders between states, to change the relationships between states and societies and to re-orientate the political agenda, encompassing both its goals and instruments.

Nevertheless, the mere occurrence of these phenomena does not itself explain why emissions trading appeared and became one of mainstream policy instruments in seeking GHG reduction. To understand where the idea of emissions trading came from, it is necessary to clarify the connection between the reasons for these environmental problems and the reactions of policy-makers, in order to identify how and why policy instruments shifted. In the following paragraphs, several key concepts will be introduced to lay the groundwork for discussion of what was the revolution of emissions trading.

A. Public goods and externalities

Under the systems of industrial capitalism and technological modernisation, according to the rational choice theory, each company displayed individual behaviour that was self-interested and always tried to maximise its utility and profit in the

production process. Thus, it was the collective result of self-interested behaviour and utility and profit maximisation that became the core cause of environmental problems (Connelly & Smith, 1999).

The production process involved the use of natural resources, for instance, water, soil and air, traditionally un-owned, *public goods or services* that are enjoyed in common (Sterner & Hammar, 2005: 19). Companies thus became free-riders, claiming the common goods with rational choices to overuse, waste or even leave pollution. The price paid by consumers for the goods produced did not include the cost of using these natural resources, and neither did the companies pay for them or states make other provisions. Commonly called the *environmental* or *social cost*, these are rarely added into either total production or final consumer prices: rather, these are *externalities*, the ‘external consequences of the activities of producers and consumers who do not have to pay for them or take them into account’ (Connelly & Smith, 1999: 162), or, the ‘unintended side-effects’ of production/consumption (Sterner & Hammer, 2006:18).

B. The Polluter Pays Principle (PPP)

The *polluter pays principle* (PPP), which has been in existence for some time now, may be regarded as a basic conceptual adjustment to externalities. Applied in the fashion of traditional regulations or assumed as an economics-based approach, the PPP in general corresponds to equity, insofar as it is understood that polluters should pay for the pollution caused by their production, to the point that ‘much stricter interpretation would require the polluters to pay for all of their discharges to the environment, not merely those deemed to be in excess of some particular limit (Connelly & Smith, 1999: 162). As Connelly and Smith affirmed, once the PPP is implemented, the necessity of creating an economics-based policy in the environmental domain then emerges, because the polluters will have an economic incentive to reduce pollution.

However, according to the definition of PPP, the question of who should pay for the pollution, consumers or the producers, remained debatable. Connelly and Smith (1999) argued that it might be fair for consumers to pay for the environmental damage, based on economic theory with a perfect market and symmetric information. In reality, however, consumers not only suffer from limited and asymmetric information but also rarely have influence to affect the producers’ behaviour or decision-making processes. Besides, no matter what kind of environmental governance approach is adopted, once the environmental cost increases, rational producers pursuing profit-maximisation may

simply pass this on. Then, consumers may not only suffer from the pollution but also be forced to pay a higher price, which definitely appears unfair and leaves the externalities unresolved. Although, in principle, it seems that producers should pay for all pollution emitted during production activities, in fact, the sources of many pollutants are not easy to distinguish. This is especially true of those pollutants, like GHGs, which are difficult to trace back to the exact polluters and thus to allow calculation of the penalty that polluters should be charged. Therefore, research started to focus on how to decide the 'ownership' of these pollutants.

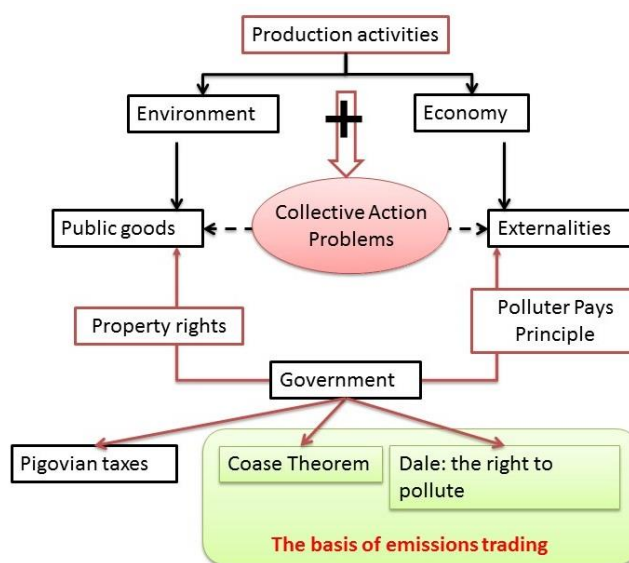
C. Property rights

The issue of ownership of pollution falls under the concept of property rights, a 'collection of rights such as the right to use the property for productive purposes, the right to sell, lease, and inherit the property, and the right to exclude others' (Sterner & Hammar, 2005:18). According to this definition, the right is much clearer when applied to individual material objects, for example, a car or a building, which the law can then protect. In this case, it is relatively easy to apply in the field of governance, with those who own items (property) taking full responsibility for them. This explains why an ecosystem or the environment is relatively hard to protect. Since no one has exclusive property rights to these natural resources, it is easy to see that a business would use natural resources to maximise its profit. Then, as Pigou (1920) suggested, industrialists seek to maximise their own *marginal private interest*. When the *marginal social interest* is different from the private, the industrialist has no apparent incentive to internalise the cost of the former, because of the uncertainty regarding ownership of these resources. Then, the final product price cannot reflect the real and total cost of the entirety of production, which means that the aggregate cost (including social cost) of this product will be higher than the price of the product, which is a negative externality.

In order to deal with this failure of market activity, *Pigovian taxes* (1932) were created, [which set an equal tax to be marginal]. However, as Sterner (2003) argued, fixing an equal tax price for all marginal damage from different sectors would not be fair, since each amount of marginal damage done might not be the same. Setting an equal tax among different industries or among different producers might be iniquitous too. Coase (1960) tried to deal with this dilemma between collective action and the uncertainty of property rights by introducing a new perspective, which became the essential theoretical foundation of emissions trading, aka *Coase Theorem* (Sterner, 2003;

Asselt, 2012). With its resulting instruments of *tradable emissions permits* (TEPs) and Dale's (1968) subsequent attempt to create '*the right to pollute*' in order to manage water conservation (in Ontario, Canada), the principle became established that once an authority had set the total pollution level, the market would then allocate 'the right to pollute' through the demand among firms. Montgomery (1972) then demonstrated the efficiency of this mechanism, generally speaking, which several writers have argued could be seen as the origin of emissions trading (Stern, 2003; Hansjurgens, 2005; Asselt, 2012). Nevertheless, this was not the same idea of emissions trading as it is understood now, but rather just one of the options among the TEPs.

To conclude the above, we can clearly find a correlation between the causes and effects, which led to the environmental governance gradually developing the idea of using an economic-based instrument to control pollution with higher efficiency. This can also be seen as providing a preparatory stage, which eventually gave birth to emissions trading. Without building up several preconditions, such as clear property rights that are protected by the legal system, few of the economic-based instruments could be further developed. Therefore, as can be seen in Graph 2, several key components leading to the birth of emissions trading can be identified. Firstly, public goods in production activities are overused to maximise profits, which leads to serious negative externalities, both of which then result in collective action problems, such as severe and irreversible pollution and rising levels of greenhouse gases in the ecosystem.



Graph 2 Key issues leading to the emergence of emissions trading

In order to deal with these collective action problems, as can be seen on the left

side of Graph 2, a series of ownership/property rights ideas and measures are then applied to the public goods in order to clarify who should take the responsibility for utilising the public goods and then creating the pollution (aka negative externalities). Thirdly, on the right side of Graph 2, the PPP is considered to be the most fundamental and effective way to internalise the externalities in production. These notions became the foundation of the different economic-based ideas mentioned above: Pigovian taxes, Coase Theorem and ‘the right to pollute’ from Dale. The difference between them is: the first is the process of pricing the pollution with an equal taxation, which is the origin of eco-tax; the other two create the legal right to pollute, and are widely believed to have become the basis of emissions trading (Asselt, 2010).

2.1.2 The history of emissions trading systems

Following the classification made by Sterner (2003) and reaffirmed by Hansjuergens (2005), the history of emissions trading can be divided into two generations. First, there is the *credit-based system*, and then the second one is the *cap-and-trade system*. The best-known type of emissions trading nowadays is almost identical to the cap-and-trade system, which itself has almost become the alternative to the traditional command-and-control approach.

However, in the first period of emissions trading development, roughly from the 1970s to the 1980s, all the market-based instruments still had supplementary status, so as to help in providing flexibility within the existing regulatory system, which was based on a command-and-control approach. Also, at this stage, most practices were applied in the United States (US). These included air quality policy with emissions reduction credit (ERC) and the Lead Trading Program in the 1980s, which mainly focused on phasing out leaded gasoline (Sterner, 2003; Hansjuergens, 2005). Several crucial concepts were already being discussed and developed during this period as ways to use the credits gained by emissions reduction, including bubble, netting, offset and banking policies (Sterner, 2003). When designing its own emissions trading system, the EU adopted some of these features. Therefore, the development of ETS was widely based on ‘learning by doing’; this is true for both theoretical development and empirical application.

However, during the stage of credit-based emissions trading, i.e. ERC, the credits were not earned by sale or purchase, but mainly came from voluntary reduction beyond the regulated level. This means that once the target pollutant is phased out completely

from the regulation design, the efficiency and feasibility of ERC are apparently limited. Under these circumstances, the 'output-based' component of the lead phase-out program in the US came forward, in which key concepts to improve the original emissions trading scheme were added. First of all, allocating the tradable rights to vendors based on the pollution intensity instead of total pollution; secondly, without the fixed allocation permits, the volume of trading permits was limited in the early years, which maintained the scarcity of the trading permits in the market; thirdly, the 'banking' option in permits trading was gradually introduced (Stern, 2003: 88-89). But the economic incentives to reduce the targeted pollutant provided by this output-based emissions trading were somehow still limited, as once the output increased, more permits were issued and allocated to the market. Eventually, it was not surprising that the environmental effectiveness of the output-based emissions trading was therefore low.

As Stern (2003) argued in his book, the next stage of cap-and-trade (CAT) emissions trading filled this gap by limiting the volume of allocated allowances. This can partially explain why the cap-and-trade emissions trading system has gradually become more popular and better known than the credit-based emissions trading approach. But it did not mean that credit-based emissions trading was then completely substituted by CAT. On the contrary, credit-based emissions trading became the foundation of today's credit-based Clean Development Mechanism (CDM) and Joint Implementation (JI) in the Kyoto Protocol (hereafter referred as the KP), which focused on cooperation between countries on GHG emissions reduction. Another perspective that should be emphasised is that emissions trading did not emerge with the purpose of replacing any existing policy instruments, but to provide additional options for policy-makers to tackle the problems they faced. Eventually, as the importance of emissions trading increased, especially with the US trial-and-error developments, the demand to clarify the uncertainties in the implementation process of emissions trading also emerged. These uncertainties became the motivations to move into the second generation of contemporary emissions trading. Therefore, although Hansjuergens (2005) placed the CAT generation as the transition between a traditional command-and-control and the market-based approach, by revisiting the evolution of earlier emissions trading systems, we believe that it was the first generation of emissions trading that should actually be seen as the transition.

The 1990s saw emissions trading starting to move to the second generation, with

several amendments made to the US Clean Air Act and the global introduction of a new ‘cap-and-trade’ system (Ellerman, 2004; Hansjuergrens, 2005). The first allowance market with a cap-and-trade system, the Acid Rain Programme, was aimed at sulphur dioxide (SO₂) reduction and started operating in 1995 (Stern, 2002; Cornnell & Smith, 2003; Ellerman, 2004; Hansjuergrens, 2005; Asselt, 2010). After that, a series of other emissions trading projects with different targets were developed, such as the famous Regional Clean Air Incentives Market (RECLAIM) programme of California to reduce SO₂ and nitrogen oxide (NO) and the NO_x Budget Trading Program (NBP). All of these, at either the federal or the state level, were based on the former emissions trading program but paid more attention to flexibility, certain property rights and emissions levels (Stern, 2003). The Northeast NO_x Budget Trading Program was also famous for its multi-jurisdictional partnership between the federal and state governments, which attracted more states to join within the United States in 2004 (Hansjuergrens, 2005: 6). This series of successful ‘cap-and-trade’ emissions trading practices received plenty of attention from not only academic and business interests but also the political domain.

A. Key features of the ‘Cap-and-trade’ Emissions trading

As the name of this system suggests, the original model of emission trading is the regulator setting the total quantity of allowable emissions, the cap, which is a compulsory target or a ceiling for the obligated sectors. The regulator also issues allowances as legal rights to emit the gases specified according to those limitations, in which the objectives are mandated within a commitment period, and allows for the sale and purchase of allowances between under- and over-emitters (Stern, 2003; Hill, 2007; Dürr, 2007). This creates scarcity of allowances and enables the allowance market to function, while producing incentives to invest in reduction technology. In order to meet the cap set by the regulator, obligated actors have several ways to buy allowances, such as bilateral agreements with other emitters, through a broker or even via a trading platform (Engles, 2009; Himtermann, 2010).

Based on the brief introduction above and combined with the argument provided by Neuhoff (2013: 56), the core concepts of cap-and-trade (CAT) emissions trading can be concluded, which are: (i) ceiling setting, i.e. CAP; (ii) a commitment period; (iii) sale and purchase, i.e. TRADE. Each of them can be further detailed and analysed with several questions, which include: why, how and who, as shown in Table 1 (next page).

Table 1 Key features of ‘cap-and-trade’ emissions trading:

	Cap: Ceiling setting	A commitment period	Trade: Sale and purchase
Why [Purposes]	<ul style="list-style-type: none"> • Set a total volume of pollutant and issue the same volume of allowances. • Create the scarcity of the allowances. • Produce incentives. 	<ul style="list-style-type: none"> • Monitoring, reporting and verification. • Increase stability and transparency of the market. • Guarantee the value of allowances 	<ul style="list-style-type: none"> • Price allowances. • Provide flexibility. • Provide economic efficiency.
How [Approaches]	<ul style="list-style-type: none"> • Baseline period setting. • Competence of government. 	Competence of the government.	Allocation approaches: <ul style="list-style-type: none"> • Grandfathering; • Benchmarking; • Auctioning. <ul style="list-style-type: none"> • Directly from spot market with bilateral agreements. • Broker.
Who [Actors]	Government	Government	Obligated emitters/ sectors

When ‘CAT’ emissions trading was first practiced in the US in 1990, the power to set the cap belonged to the federal government, which, at that time, could be seen as a partially political concern in compensating the existing obligated sectors with free-allowances distribution (Neuhoff, 2013). Besides that, considering the adjustment between existing domestic regulation and any new emissions trading system, it is crucial to ensure that contradiction is minimised. Also, the cap setting is directly connected to the scarcity of allowances, which maintains the link to the liquidity and economic incentives of the whole system. Thus, it is for the government to set the cap

based on the specific baseline period and then issue the same volume of allowances for the obligated sectors.

The second key feature is the commitment period, which plays an essential role connected to monitoring, reporting and verifying the implementation. Based on the annual reports of monitoring, reporting and verifying the reduction, the regulators can evaluate the improvement and the reduction efficiency of the system. In addition to that, the clear design and the continuity of commitment periods can enhance the stability and the transparency of the system, which, indirectly, can stabilise the price and the liquidity of allowances. Thirdly, from the ‘Trade’ perspective, it is all about how allowances are priced. Contrary to taxation, which sets an equal price to polluters, ‘cap-and-trade’ lets the market decide the polluters’ marginal reduction cost. Besides, it also provides greater flexibility to these emitters with the choice of:

- reducing their emissions until they are equal to the allowances they have received;
- reducing their emissions below their allocation by investing in reduction technology and selling the excess allowances;
- purchasing the required volume of allowances on the market to cover their excess emissions.

According to the Coase Theorem (1960), the distribution approaches toward the permits have little effect on the results of pollution reductions; however, in the ex post practices, the different allocation approaches might have some effects on the CAT type of emissions trading. Therefore, the allocation approaches toward the permits, i.e. allowances, should be included in the key components of CAT emissions trading. Based on the practice from the first ‘producer’, i.e. the US, there are at least three main approaches, which are: (i) grandfathering: allocating the allowances by historic emission variables in a specific baseline year; (ii) benchmarking: setting a benchmark ratio according to pollution intensity and based on the different ratios to allocate the allowances. A clearer explanation can be found in the following equation provided by the *White Paper: Issues and Options for Benchmarking Industrial GHG Emissions* (SEI, 2010:3).

$$GHG \text{ Benchmark} = \frac{\text{Emissions (tons CO}_2\text{e)}}{\text{Unit of Output (tons, \$, or other metric)}}$$

(iii) Auctioning: with the basic idea that the issuer, i.e. the government, owns these allowances, and then all the allowances are allocated through auctioning (Stern, 2003). After the allocation process, the obligated emitters can obtain the allowances either by bilateral trading agreements or through brokers.

B. A representative example - the Acid Rain Programme in the United States

The trading periods of the Acid Rain Programme started in 1995 for Phase I and for Phase II in 2000. In the beginning, the obligated sector was that of energy production, specifically the fossil-fuel burning power plants located in forty-eight states across the US. Then, it expanded to include fossil-fuel electricity generating units of a size greater than 25 megawatt (MW). The allocation method was by grandfathering, according to the three-year baseline period, 1985-1987, while, in order not to bring further uncertainties to the price and the liquidity of allowances, they were permitted to be carried over, banked for the future use or traded in this programme (Ellerman, 2004). Ellerman suggested that because of the successful experience in reducing SO₂ and NO_x emissions trading became the option favoured for years by many air pollution control projects in the United States.

The generally successful experience of reducing SO₂ and NO_x emissions through emissions trading in the United States became the best marketing tool for the supporters of emissions trading. The experience proved that emissions trading was not only cost-saving, but also an innovative approach to fulfil the need for emissions reduction (Asselt, 2010). Therefore, it is not surprising that the US became the most powerful supporter of emissions trading not only at the regional but also at the global level (Asselt, 2010). Although Spash's (2010) investigation into the overall development of carbon trading provided a critique of this US-style trading platform – informed by the business strategy of maximising benefit with the lowest binding to reduce GHGs – after the United States started the second generation of emissions trading, the key concerns and components of the overall framework were set. Summarising the literature and brief introduction above, several preconditions can be listed as the criteria for building an emissions trading framework:

- a. An ample legislative authority and the high protection of property rights.
- b. A mature and liquid market.
- c. The credibility of the authority issuing and verifying the allowances.

2.1.3 The turning point: emissions trading in the international regime — the Kyoto Protocol

Because of the successful experience of emissions trading in the *Acid Rain Programme* of the Clean Air Acts in the 1970s in the US, not only national states but international organisations started setting an agenda for building GHG emissions trading. For example, the Organisation for Economic Cooperation and Development (OECD), the United Nations Conference on Trade and Development (UNCTAD) with its GHG Emissions Trading Project (1992) and the International Energy Agency (IEA) all contributed to making the possibility of building an international emissions trading scheme an optimal option in global climate negotiations. Under these circumstances, therefore, backed by the support from these Organisations, it is not surprising that the United States took a leading position in the JUSSCANNZ Group,¹ suggesting that emissions trading should be integrated into the KP, as one of the flexible mechanisms (Brawn, 2009; Asselt, 2010).² Meanwhile, as the highest GHG emitter, producing 36% of emissions in 1990 (BBC News, 2003; Shreurs and Tiberghien, 2007), the US certainly had extra leverage during the negotiation process. However, as the conference of the parties (COP) in the United Nations Framework Convention on Climate Change (UNFCCC), the EU and developing countries (G77+ China) maintained opposition to the proposal of adding the emissions trading to the flexible mechanisms. Thus, the inclusion of emissions trading in the flexible mechanisms of the KP became a central issue of the negotiations, and it caused the KP negotiations to go into deadlock.

For the US, even with its successful domestic experience of emissions trading, economic growth and competitiveness remained the top priorities. After a series of estimations made from 1997 to 2001, it was thought that implementing the KP with the flexible mechanisms might save approximately US\$ 761 billion in GHG emission reductions (Benwell, 2009). Against that, without the help of flexible mechanisms, the anticipated cost was 1.5% of GDP in the United States (Clinton Administration, 1998).

¹ Japan, the US, Switzerland, Canada, Norway and New Zealand.

² Based on Article 4.2.d in the *Convention on Climate Change*, there is a ‘flexible mechanisms’ provided for and regulated by the Kyoto Protocol, which involves emission trading (ET, Article 17), joint implementation (JI, Article 6) and a clean development mechanism (CDM, Article 12).

The (George) Bush Administration (2001) later confirmed that once the US adopted the KP, it would cost 1-2% of GDP by 2010 without emissions trading. But even if emissions trading was added into the KP, the estimated net losses of implementation in the US could be about US\$ 313 billion and might even endanger its competitiveness with its now major competitor, China, which would not be bound by the reduction commitment under the KP, the Quantified Emission Limitation and Reduction Commitments (QELRCs). It is clear, therefore, that as long as the GHG reduction was also applied to developing countries and the flexible mechanisms accepted, the US would consider ratifying the Protocol. Otherwise, with the concerns of protecting its economic development, the US would not entertain any treaties connected to the United Nations Framework Convention on Climate Change. Eventually, the US decided not to adopt the KP in the Byrd-Hagel Resolution in 1997, as announced by the Bush administration in 2001 (Oberthür & Kelly, 2008; Costa, 2009; Benwell, 2009; Kelemen, 2010; Karlsson et al., 2011, Vogler, 2012).

From the EU's point of view, on the other hand, the US' GHG reduction practice through emissions trading came to be regarded as the right to pollute or 'trading in indulgences' (Braun, 2009:472), which ran exactly contrary to considerations of equity. Besides, all the GHG reduction commitments under the KP were to be fulfilled by national measures. The adoption of flexible mechanisms then became understood as the optimal evidence to prove the relative leverage between the EU and the US (Skjærseth et al., 2008; Costa, 2008). Compared to the US, the EU had long preferred to reduce GHG by taking domestic measures rather than the market-based tools. More precisely, the EU traditionally relied on command-and-control policy instruments when dealing with air and water environmental problems (Vogler, 2012; Lederer, 2012; Wrake, Burtraw et al., 2012).

After the US refused to adopt the KP in 2001, the EU was forced to consider whether it should keep advocating KP and let most of the developed countries be bound under a global commitment, or whether it should give up on the overall global climate governance idea. Considering the irreversible outcomes that would result from climate change and the increasing environmental control costs, it seemed to be obviously more reasonable and in fact quite necessary to mitigate the situation through the global commitment and cooperation. Therefore, rescuing the KP became the EU's preference and top priority. Thus, following the Article 25 in the KP:

‘This Protocol shall enter into force on the ninetieth day after the date on which not less than 55 Parties to the Convention, incorporating Parties included in Annex I which accounted in total for at least 55 per cent of the total carbon dioxide emissions for 1990, have deposited their instruments of ratification, acceptance, approval or accession (United Nation, 1998). ‘

This means that only when the EU persuaded the rest of the key emitters, like Russia, which accounted for 17.4% of 1990 emissions, and had them ratify the KP successfully before 2005, could the KP come into effect (Hovi et al., 2003). Without the EU rescue with its diplomatic and multilateral negotiation skills, the KP would probably have failed. As a strong multilateralism advocate, in contrast to the unilateralism of the US, the EU certainly saw climate regime as an optimal arena in which to show its leadership (Scheipers & Sicurelli, 2007). This was also the starting point from where the EU came to be acknowledged by other countries for its climate regime leadership, though some scholars consider that the EU started showing its leadership earlier, in the 1990s (Oberthür & Kelly, 2008; Killian & Elgström, 2010; Kelemen, 2010).

For the viewpoint of the EU, as the main supporter and taking the leading role in respect to the KP, finding ways to reduce GHGs and meet its reduction targets then became a key point in showing its leadership and influence in the global climate regime. Thus, some researchers (Braun, 2009; Wrake, Burtraw et al., 2012) regard the KP as one of the main factors resulting in the construction of the EU-ETS. Several researchers, however, have argued that it was the failure to implement an EU-wide CO₂-tax that gave the European Commission (hereafter: the Commission) no choice but to find some other instrument to deal with environmental issues, especially GHG reduction (Butzengeiger & Michaelowa, 2004; Skaereth & Wettstad, 2008; Braun, 2009; Lederer, 2012; Wrake, Burtraw et al., 2012). Besides, because of the more difficult decision-making processes involved with fiscal policy in the European Council (related to the unanimity rule), accepting emissions trading as an environmental policy through qualified majority voting (QMV) became a relatively acceptable and achievable option for the EU. Eventually, therefore, emissions trading became the favoured option for Europe, not only from the perspective of implementation under the KP but also internally, to save the integrity of EU processes in environmental policy.

As regulated by Article 3(2) under the KP, the contracted parties were required to show ‘demonstrable progress’ no later than 2005 (Boasson & Wettstad, 2013). Thus,

in 2000, the European Commission announced a series of climate policies and strengthened the importance of these in the political agenda, for example by establishing the European Climate Change Programmes (ECCPs), which later influenced the construction of the EU's internal Emissions Trading Scheme (i.e. EU-ETS). This turned a new page in EU environmental governance: taking emissions trading as its core policy instrument marked the first step toward European integration in this area.

2.2 The crucial pioneer of Emissions Trading: the European Union (EU)

2.2.1 A compromise to save the international climate regime

Global influence also had a part in explaining why the EU-wide CO₂-tax failed. First of all, the successful emissions trading practice in the US was of crucial importance to the trend in global emissions trading, which Denmark and the United Kingdom (UK) applied domestically and became the emissions trading supporters in the EU. Especially before rejecting the KP domestically, the US's convincing experience and the strength of its flexible mechanism toward GHG reduction definitely affected many participants' positions on emissions trading in the negotiation process of the KP. This bargaining advantage successfully led flexible mechanisms to be accepted and adopted by the KP, though the US eventually withdrew from it.

Afterwards, the turning point in negotiating the global climate regime is widely considered to be the withdrawal from adopting the KP by the US in 2001, (Karlsson et al., 2001; Oberthür and Kelly, 2008; Kelemen, 2010; Vogler, 2012). A power vacuum in this new arena of global climate regime subsequently emerged, which created the EU's political goal to fill and replace the US's position (Wettestad, 2005; Spash, 2010). Holding the leading role in global climate negotiation provided not only the short-term gain of filling the power vacuum, i.e. the '*Reciprocal of US abdication*' (Vogler, 2008: 359), but also long-term benefit for the EU, considering the issue-linkage characteristic of climate change, which is clearly connected to both economic and energy issues. Thus, under the time pressure of rescuing the KP, it was crucial for the EU, internally, to provide a '*demonstrable process*' before 2005 and replace its failed eco-tax initiative. Externally, the EU also devoted itself to pursuing global leadership by convincing the rest of the major GHG emitters to adopt the KP through diplomatic and economic

measures to meet the condition under Article 25 of the KP.³

Following the analysis conducted so far, it is still not fully apparent why the EU decided externally to rescue the KP and internally to apply the emissions trading approach. Vogler (2008) focused on how international requirements formulated policy-making domestically within the EU, and argued that the EU's leadership can only be shown and provided in a limited political context and time. Other studies emphasised assessing the EU's influence, as an environmental leader, on global climate negotiation and agenda (Gupta and Ringius, 2001; Metz et al., 2001; Vogler and Stephan, 2007; Wurzel and Connelly, 2007; Costa, 2008). Although so far the EU has been the actor most acknowledged and recognised as a leader in the climate regime (Karlsson et al., 2001; Schreurs and Tiberghien, 2007; Costa, 2008; Oberthür and Kelly, 2008; Kelemen, 2010; Kilia and Elgström, 2010; Rusche, 2010), the reality is that the leading status of the EU remains doubtful or fluctuating. Lots of studies (Gupta and Ringius, 2001; Metz et al., 2001; Skodvin and Andresen, 2006; Vogler and Stephan, 2007; Wurzel and Connelly, 2007) have analysed the leadership by dividing it into four types, which are structural (relies on political and economic power), directional (needs domestic implementation), instrumental (establishes winning coalitions by diplomatic skills) and intellectual leadership (applies influence in agenda-setting processes). Unsurprisingly, the leadership that the EU possesses within the global climate regime remains questionable because of the lack of intellectual leadership. Thus, there is still plenty of room to further assess and identify it. Although whether the EU owns the leadership in the global climate regime is beyond the scope of this research, the attempt to pursue leadership does affect the formulation of MS' preferences, both internally and externally, especially when taking the initial European integration into consideration. Also, at this stage, the EU was trying urgently to build up the credibility of its position and 'actorness', in both internal and external arenas, efforts in which pursuing leadership might be a beneficial approach.

As a 'multiple actor' (Oberthür and Kelly, 2008: 37), before the EU started competing ambitiously for leadership in the global climate regime, it needed to legitimise itself as an international actor first. Also, in the meanwhile, it had to take the

³ The most famous instance of 'exchanging' and persuading Russian government to ratify the Kyoto Protocol is that the EU agreed to support Russian's entry into the WTO (Bretherton and Vogler, 2006:109; Vogler: 2008: 367).

parallel development of European integration into consideration. Thus, internally, a series of Directives and legislation reforms were made between 1970s-1990s (Kelemen, 2010). Also, starting from 1990, the EU has been actively involved in international environmental diplomacy, though obstacles arose in the competence shared between the EU and its MS (Volger, 2008: 258). In addition, the EU gradually integrated its environmental policies and developed a common EU-level approach. For example, the three of ECCPs and six of Environmental Action Plans (EAPs). These were able to contribute to a higher coherence among MS, to clarify the principles and guidelines of environmental policies and to identify the necessary ingredients for the EU to implement the KP.

Most importantly, after it legitimised itself within the EU's legal texts, the EU still needed to search for its legitimised actor status in the external arena. Then, in order to maintain both its common market development and its pursuit of the climate leadership, the EU produced its burden sharing agreement (BSA) in 1998 and chose a Regional Economic Integration Organisation (REIO) approach with the 'bubble' concept to join the Protocol. With the 'EU bubble' approach, the EU-15, as a whole, needed to reduce its GHG emissions by 8% compared with its 1990 baseline before the end of 2012 (Barker, 2001). On the one hand, in the international politics aspect, this represents successful leverage in global climate negotiation by using its pollution size and market size (Kilian and Elgström, 2007). On the other hand, with the economic concerns, 'EU-bubble' could share the greenhouse gas reduction cost among the MS (Barker, 2001). But some researchers from developing countries criticised the fact that specific countries could escape their reduction commitments by hiding under the 'umbrella' of the 'EU-bubble'. However, it is undeniable that this kind of collective action helped the EU to increase its coherence and credibility both internally and externally, and then strengthened its leadership status gradually with the US losing its influence in the climate regime.

So, apart from the EU's multilateralism and the reliance on its 'soft' (civil and normative) power to develop its leadership (Kilian and Elgström, 2007; Oberthür and Kelly, 2008), three approaches allowed the EU to improve the quality of its leadership and reinforce its influence in the climate regime:

- (1.) Improve vertical and horizontal coherence by developing and implementing internal climate policy to eliminate the 'credibility gap' between its reduction

commitments and actions (Kilian and Elgström, 2007) by building up a representative instrument, the EU-ETS.

- (2.) Strengthen its diplomatic policy to cooperate, or even coordinate with global climate regimes. For instance, incorporating environmental concerns into its Common Foreign and Security Policy (CFSP) in the diplomatic arena, or using the Linking Directive (Directive 2004/101/EC) to connect its internal emissions trading market to a global project-based credits market under the flexible mechanisms.
- (3.) Gradually reinforce legitimacy and legislation reform to expand the efficiency and scale of its climate policy.

Thus, it is clear that the acceptance of market-based instruments and building the EU-ETS can be identified as a milestone in the whole process of the EU becoming the global climate regime leader. The reasons include:

- (1.) It became an appropriate tool to speed up European integration (Oberthür and Kelly, 2008). It also showed the EU's cognitive leadership with setting up an EU-styled emissions trading market and measures, which means the EU redefined and adjusted the original emission trading notion from the US. Then, adding the characteristics of common internal market and decentralised regulation, the EU-ETS remains the biggest and most successful emissions trading market in the world.
- (2.) It temporally released the EU from getting stuck in its internal climate policy dilemma after deadlock over the failed carbon tax, and it also retained the potential connection between the EU's emissions trading market and the global carbon market.
- (3.) EU-ETS can also be seen as one of the instruments of the EU to lead by example and show its directional leadership both regionally and globally, in the carbon economy and in politics more generally.

Nevertheless, 'command-and-control' instruments have traditionally dominated most environmental policies in Europe. And the limited experiences with economic incentives instruments were mainly taxes, e.g. Germany, Austria, the Netherlands and the UK (Wurzel et al., 2013). However, after struggling with the pressures from global

and internal conflicts, the preference toward environmental policy instruments of the EU was suddenly changed (or somehow had to change), which then pushed the EU climate governance in a different direction aligned with the Europeanisation trend in politics. Several researchers have affirmed that there are two main reasons for this change, which are: i) the adoption of the KP; ii) the failure to adopt a community-wide Eco-tax in the 1990s (Butzengeiger and Michaelowa, 2004; Wrake et al, 2012; Lederer, 2012). Wrake et al (2012) further argued that the understanding and classification of Eco-tax and emissions trading were initially different and therefore led to the different decisions-making rules in the EU. Owing to the different difficult level of decision-making rules, the EU was on the way to becoming the advocate and the global pioneer of cross-border emissions trading.

2.2.2 The policy instrument preference shift within the EU

Apart from the two major reasons listed above, this thesis intends to identify changes in other actors' preferences and to unpack the MS' synergies (or conflicts) internally that resulted in the EU's shifting preferences towards emissions trading. Table 2 (on the next page) divides the possible reasons for shifting policy preferences in the EU into internal and external parts, and then takes actors and factors at different levels and dimensions into consideration. In the early 1990s, most MS and the European Commission preferred a mix of command-and-control policies with a carbon tax. In particular, the Directorate General for Environment (DG Environment) strongly advocated building a 'community-wide' CO₂/eco-tax, though at that time the DG Environment's influence remained weak compared with other DGs in the European Commission (Boasson and Wettstad, 2013). After the emphasis on the need to use fiscal instruments written in the *Task Force on the Environment and Internal Market* (1990), the UN Rio Earth Summit, and increasing climate change concerns further highlighted the issue, the call to support the eco-tax became louder. The most famous advocate was the Environment Commissioner Carlo Ripa di Meana, who used the 1992 UN Rio Earth Summit to strengthen the EU's role and the Commission's influence (Wurzel et al, 2013). The greatest opposing trend originated with Taxation Commissioner Schrivener, and directly deepened and sharpened the conflict within the European Commission (Wurzel et al, 2013; Boasson and Wettstad, 2013).

Table 2. Reasons for the policy instrument preference shift in the EU

	Internal disagreement in the EU	External influence from around the globe
Actors	EU institutions	<ul style="list-style-type: none"> ▪ The successful domestic Acid Rain Programme in the US. ▪ USA's advocacy of ET in flexible mechanisms in the KP negotiations. ▪ Leadership competition in building up the global climate regime in the UNFCCC.
	The European Commissions, DG for Environment; the European Council	
	Member States	
	<div>Eco-tax</div> <ul style="list-style-type: none"> ▪ Advocates: Germany, the Netherlands. ▪ Opponents: the UK, Spain, Italy and France 	
	<div>Emissions Trading</div> <ul style="list-style-type: none"> ▪ Advocators: the UK, Denmark. ▪ An opponent: Germany 	
Pressures	<ul style="list-style-type: none"> ▪ Political pressure: domestic measures and the concept of 'community-wide'. ▪ Time pressure: KP §3(2) ▪ Decisions-making rules in EU. ▪ Economic concerns: Industry. 	<ul style="list-style-type: none"> ▪ Bargaining and negotiating process in the KP; ▪ Political ambitions of EU in global climate regime; ▪ Time pressure.
Results	Eco-tax failed	<ul style="list-style-type: none"> ▪ Secured the KP and EU's leading role in the global climate regime. ▪ The KP came into force globally in 2005.
	<ul style="list-style-type: none"> ▪ Member states agreed to build 'community-wide' Emissions Trading in EU. 	
	<ul style="list-style-type: none"> ▪ Green papers adopted in 2000. 	

At the national level, only a limited number of MS supported the EU-wide eco-tax, notably Germany and the Netherlands (ibid). Meanwhile, stronger opposition came from the British government, Spain, Italy and France, who were supported by several sectors of industry in the EU (Butzengeiger and Michaelowa, 2004; Lederer, 2012; Wrake et al, 2012; Wurzel et al, 2013; Boasson and Wettstad, 2013). The main concerns leading these actors to block the eco-tax were to do with loss of sovereignty and the disadvantage toward economic development, especially since the whole negotiation process was conducted during the process of European integration. Once

these two different levels of disagreements were combined and situated in the EU's institutional context, which clearly requires that fiscal policy such as an eco-tax gain unanimous support in the European Council, the result was that each member state had enough influence and legal standing to block the proposal of the eco-tax (Wrake et al, 2012; Wurzel et al, 2013).

Apart from the political reasons, legitimacy incentives in the global climate regime, i.e. the KP, and empirical incentives from the US as classified above, the merits of emissions trading appealed not only to MS but also to several industries and scholars for both economic efficiency and environmental acceptability (Ellerman et al, 1999; Hill, 2007; Böhringer et al, 2009). Although the eco-tax and emissions trading are both designed to internalise the externalities from production processes, for industry and firms which pursue self-interest and maximise their utility and profit, taxation is seen as an additional cost of production that is eventually added into the product price. Other key concerns that industry and firms have about eco-tax emphasise the drawbacks of competitive impact and the regressive effect on less wealthy sectors of society (Bailey and Rupp, 2005).

In contrast, within the emissions trading system, the trading permits or allowances with a clear property right can become assets for industry and firms. The economic incentives of these assets result from the flexibility of market trading price and indirectly encourage long-term investment in technological innovation. More precisely, industry and firms can decide whether to sell the trading allowances when their abatement cost is under the allowance to fund their investment in production and innovation or buy the allowances from brokers or the market (ibid, 2005). Therefore, it is safe to say that emissions trading gained the preference of industry and firms in the EU over the eco-tax.

When further investigating the EU shifting its position from opponent to advocate of emissions trading, for the scholars of LI, it is clear that most of the position shifting from opponent to advocate corresponds to the LI explanation of integration. At the very beginning of the EU-ETS initiation process, during which MS' exact preferences for fixing and re-organising were in play, LI successfully explains why the EU-ETS was able to grow in the EU in such short time. The internal disagreements revealed in inter-state negotiations reflected the individual states' adherence to their national preferences. In addition, the relative power and growing independence of the common market, as

suggested by LI, were of crucial concern in the EU's negotiation of the replacement of the failed and controversial eco-tax and in its goal to increase its influence in global climate negotiation, i.e. the KP. Even with the supranational institutions' influence leading the replaced policy instrument and climate governance when representing the EU as a whole externally, MS still played the key roles and relied on rational choice to bargain their individual preferences against or influence the EU's institutional context. For example, the unanimity requirement and the veto power in the European Council were used to control the European Commission's policy drafts and its policy direction (Moravcsik, 1995), as in the case of the failure of the community-wide eco-tax. At the later stage, the MS asked the Commission to provide a substituted set of policy instruments to tackle the GHG problem through the delegation of the European Council. Therefore, it is safe to conclude that the decision to use emissions trading and to build an EU-wide emissions trading framework reflects both the states' and EU's preferences, even while some members, such as Germany, might have remained reluctant.

2.2.3 The legal discretion of EU institutions in making environmental policy

In the development and integration of the EU, economic concerns can be seen as an initial influence to push MS into cooperating and integrating and then building up the supranational institutions of the EU. Thus, it is quite easy to understand that at the beginning of the process, as in the Treaty of Rome, environmental concerns were not focused on, or mentioned at the negotiation table. But with the increasing concern about environmental issues and climate change globally and regionally, and with the concerns of developing an internal common market, it is not difficult to justify the necessity for the European Community (in pre-Maastricht stage) to set out a series of measures establishing legitimacy and legal discretion in the environmental field at community level. Therefore, in order to trace the development and the changes in the legal standing in the environmental field, this section focuses on the treaties listed in Table 3 on the next page.

As Table 3 shows on the next page, the legal bases in the Treaty of Rome are Article 100 and Article 235. Jeppesen (2002) considered these could be seen as two different concerns and the basis in the environmental field. Firstly, Article 100 was mainly designed to protect or harmonise the operation of the common market in what was to become the EU. In other words, the focus of this Article is on economics rather than environmental concerns, for instance, the series of regulations about motor

vehicles (70/157/EEC; 83/351/EEC and 72/306/EC).

Table 3. The development of legal standing of environmental policy in EU Laws.

	Treaty of Rome⁴	The Single European Act	The Maastricht Treaty⁵	The Amsterdam Treaty	The Lisbon Treaty⁶
Signed	1957	1986	1992	1997	2007
In-force	1958	1987	1993	1999	2009
Article	Article 100 Article 235	Article 100A Article 130R-130T	Article 189B Article 3c Article 130R Article 130S Article 130T Article 189C	Article 251 Article 2 Article 6 ⁷ Article 174 Article 175 Article 176 Article 252	Article 191 Article 192 Article 193

Article 235 set out to create a new policy, which Jeppesen called the ‘safety valve’ (2002: 12). The purpose of this Article was to improve the EU institutions' ability to face incidents which they could not foresee. Under these circumstances, numerous Directives about environmental matters are issued because of article 235, for instance, environmental quality standards regarding surface water and air (76/160/EEC; 78/659/EEC, 79/923/EEC and 80/779/EEC) (Lieverink, 1996; Jeppesen, 2002). Later on, because of the disputes case 92/79 which happened between the European Commission and Italy in 1980, Article 100 was recognised by the European Court of

⁴ The Treaty of Rome is also called the Treaty establishing the European Economic Community (EEC) officially, but it is later revised and renamed as TFEU.

⁵ Officially called *the Treaty on European Union* (TEU)

⁶ This treaty contained the amendments to the EEC.

⁷ Article 6 (ex-Article 3c): Environmental protection requirements must be integrated into the definition and implementation of the Community policies and activities referred to in Article 3, in particular with a view to promoting sustainable development.

Justice (ECJ) as establishing the legal standing of the EU institutions in the environmental field, and based on this, the EU can enact related provisions on environmental and health grounds in order to avoid any distortion in the common market (Sands, 1995).

Then, the Single European Act (SEA) was the first treaty to include the new section VII for the environmental field. It detailed the regulations with Articles 130R—130T, which included the objectives, requirements, the decision procedures...etc. In addition, Article 130R (4) also applied the principle of subsidiarity to environmental measures (Jeppesen, 2002; Sands, 2003). Moreover, with Article 130S, it was noted that the Council should adopt the Acts drafted by the Commission mainly through unanimous decision and occasionally through qualified majority voting (Jeppesen, 2002). In other words, the SEA represents a new momentum for European integration by broadening the Community's competence in the environmental sphere.

The focus on environmental issues was much sharper in the Maastricht Treaty, where it was also given a high level of legal standing. Article 100A, with its focus on harmonisation in the SEA, was revised and replaced by Article 189B in the Maastricht Treaty. The core change was that the decision procedure of the Council changed from a unanimous to a co-decision procedure. Also, when applying Article 130S to draft provisions, they need to be adopted by the European Council with the co-operation procedure in Article 189C. But on some occasions with general programmes in the environmental field, these should be decided with the co-decision procedure in Article 189B.

The specialty of the Amsterdam Treaty is that the environmental policy chapter finally appears and is clearly regulated with chapter XIX (ex-Title XVI), and a number of articles were also re-numbered to Article 174 (former 130R), 175 (former 130S) and 176 (former 130T). The essential part of the changes was that according to Article 175, the Council should use the co-decision procedure under Article 251 (former Article 198B) to decide which action they should take. In other words, the influence of the European Parliament (hereafter referred to as the Parliament) in the environmental policy field was increased in the Amsterdam Treaty. Finally, in the Lisbon Treaty of 2007, the legal basis of EU-level environmental policy was re-numbered again to Articles 191-193.

2.2.4 The actors and their impacts on the EU-ETS

The affected actors and their reactions have been closely discussed in a great deal of literature regarding EU-ETS implementation, especially with the concerns about their interests, costs and benefits. Besides, because of the EU enlargement in 2004 and 2007, EU-ETS negotiation is vertically and horizontally complicated by large amounts of leverage and disputes among the actors involved. As mentioned before, some researchers preferred to analyse this by LI approach, some argued that the MLG can explain the development of EU-ETS, and still others preferred to use the international regime and supranationalism approach to understand why the EU and its MS would construct the EU-ETS (Markussen and Svendsen, 2005; Skjærseth and Wettestad, 2007, 2008a 2008b and 2009; Flåm, 2009; Eliassen et al., 2010). No matter which theories and aspects are emphasised and applied to explain and understand EU-ETS, the main actors are repeatedly on show in this arena, and they are European Institutions, MS, Industry and Environmental Non-governmental Organisations (ENGOS). Thus, the more appropriate and clearer way to investigate the effects on and reactions to the design and implementation of the EU-ETS from different actors is discussed individually as follows:

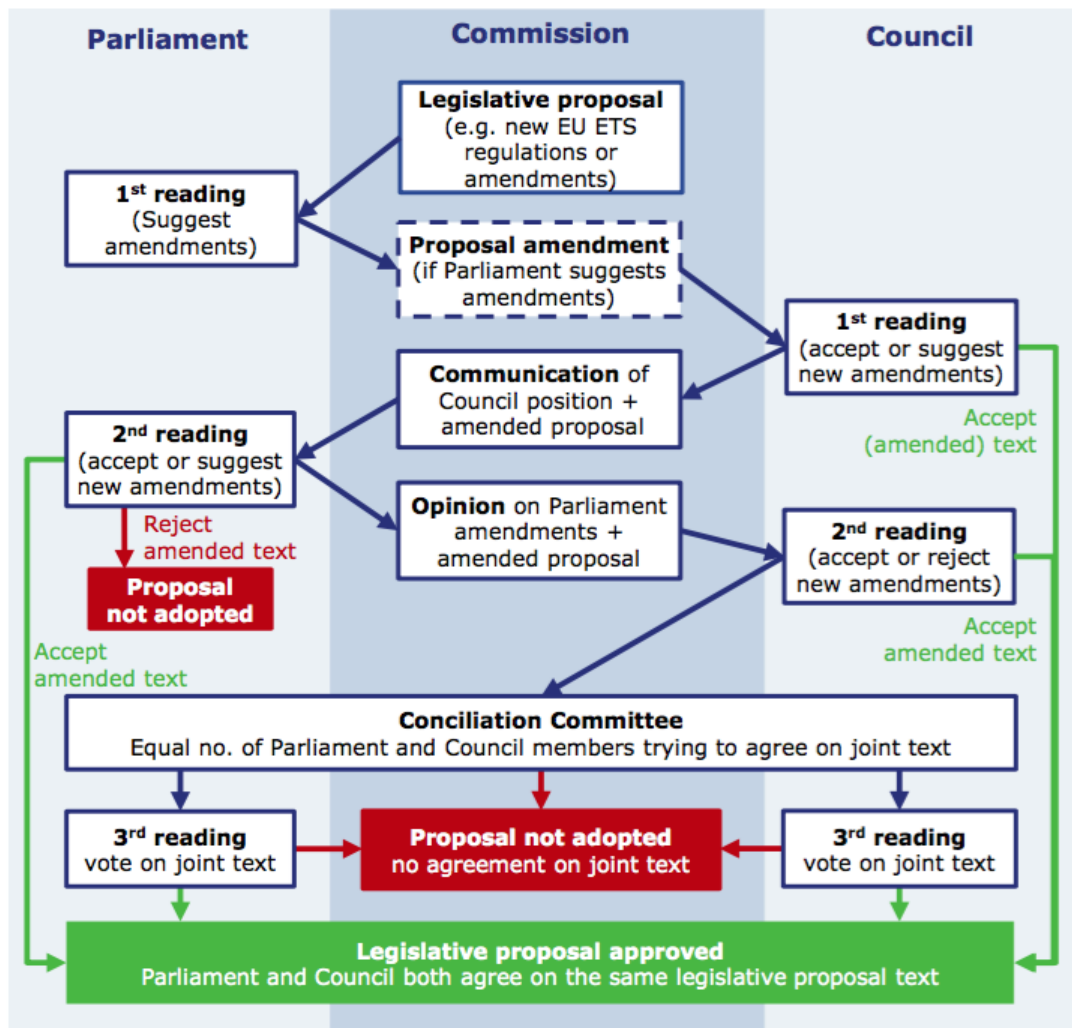
(1.) European institutions

With the advantage of the EU's legal discretion design and the principle of subsidiarity, the European Commission (hereafter referred as: the Commission) directly controlled the initiation of the ET Directive proposal following the legislation request from the European Council (hereafter referred as: the Council). Thus, lots of the literature focuses on what role the Commission plays in the EU-ETS. For example, with the multi-level governance approach, Skjærseth and Wettestad (2010) argued that the Commission is the 'entrepreneurial epistemic leader'. With the focus of EU Enlargement in the EU-ETS building process, the Commission can be seen as the 'engine of integration' (Skjærseth and Wettestad, 2007: 267). When it comes to EU-ETS implementation (from National Allocation Plans deliberation to the efficiency monitoring, ratification and verification, the Commission then has become the 'watchdog' of the whole system (Skjærseth and Wettestad, 2008: 287). Besides, several committees that strongly support the EU institutions also play pivotal roles while designing and revising the EU-ETS, such as the Environment, Public Health and Food

Safety Committee (ENVI) and the Industry, Research and Energy Committee (ITRE) from the Parliament and the Climate Change Committee in the Commission. Apart from this, the Commission also calls upon external expert groups that are formed by the Commission to support the preparation of legislative proposals and the implementation of existing EU legislation. It is believed, for example, that the DG Environment from the Commission enlisted external help from the power sectors' federation (Eurelectric) to receive expertise and knowledge from these main actors in ETS-sectors in the initial stage of designing the ET Directive (Wettestad, 2008). Also, with help from the epistemic community composed of the industry representatives, researchers, and other interest groups under the ECCPs (Brussels, 2008),⁸ the Commission has also been put in the position of not merely an agenda-setter, a direction-decider, but the definition-maker as well.

As illustrated before, since the SEA, the powers from the Community-level, i.e. EU institutions, have gradually established and clearly shown their competence in environmental issues. As the main pillar and most representative environmental policy instrument in the EU's climate governance, the EU-ETS also falls under European powers. The key institutions involved and playing a crucial part in legislation under the 'co-decision' principle are the Parliament, the Commission and the Council (as can be seen in Graph 3 on the next page).

⁸ Details about ECCPs will be demonstrated later in chapter 2.



Graph 3. The legislative procedure of the EU-ETS in the EU. Source: EU-ETS handbook (2015: 10)

As shown in Graph 3, the Commission is the one which has the competence to initiate a legislative proposal of regulations or amendments to the EU-ETS, whilst the Council and the Parliament can raise amendments to these legislative drafts from the Commission. Within the legislative procedure, according to Article 251b in the Amsterdam Treaty, *‘the Council and the Commission shall inform the European Parliament fully of the reasons which led the Council to adopt its common position and also of the Commission’s position.’* Then the Parliament, under the absolute majority of its component Members, may provide the amendments to the Council’s common position or reject the Council’s common position, both of which are then transmitted to the Council and the Commission (Article 251c). Afterwards, the Commission then has to take into account the amendments proposed by both the Council and the Parliament. So, before the proposal is adopted, it needs to be voted on and the text jointly agreed

after three readings by both the Council and the Parliament.

When it comes to the practical implementation, the Commission takes action, as set out in the legislation, to monitor and track whether MS have properly implemented the policies from the EU. This is also the major arena of interaction, and conflicts may occur between the Commission and MS that have direct influence on the EU-ETS development. (More details will be discussed in case studies starting from chapter 4.) Given that the solidarity among EU institutions is reinforced in Article 252a, the influences coming from the so-called ‘Trialogue’⁹ meetings between the Parliament, the Council and the Commission on fixing the EU-ETS have become more obvious, though these meetings are informal. Even with the good intention to speed up the EU legislation process with consensus, the direct legal standing of these trialogue meetings remains unclear and questionable, like a ‘black box’ (Fox, 2014).

(2.) Member States (MS)

Due to different national circumstances in every MS, the negotiation of a cross-border and relatively new GHG reduction approach with emissions trading framework was undoubtedly tough, though some MS had planned and enforced similar measures in their regional field, for instance Sweden in the 1990s and the United Kingdom at the beginning of the 2000s. Later, with the concerns about the developing internal common market of the EU and following a demand from the Council, the Commission was requested to propose a community-wide emissions trading framework. Thus, before the ET Directive was proposed and adopted, how to persuade the MS to adopt it and be willing to cooperate and make the necessary adjustments were essential in the policy-designing process.

Skjærseth and Wettestad (2007, 2008a and 2008b) believed that the decentralisation characteristic of the original EU-ETS was the result shaped by the MS’ preferences with the Commission’s attempt to maximise the acceptance from the MS. The other concrete explanation may be the need to find a new environmental policy to break the deadlock of community-wide eco-tax negotiations, whilst finding cost-

⁹ According to the explanation made by the Commission, ‘Trilogue / Trialogue’ means the informal tripartite meetings attended by representatives of the European Parliament, the Council and the Commission, in which the level and the range of attendance, the content and the purpose may be different.

efficient instruments to help the EU as a whole to meet its Kyoto commitment. To assess the impact of MS on the design and negotiation of EU-ETS, it is necessary to divide them into two groups, which are the EU-15 and the new accession countries. With the concerns of their different joining dates and the asymmetric development levels, the preferences, demands and the attitudes of MS differ considerably from each other.

A. The EU-15

Skjærseth and Wettestad (2010) argued that there are three ways for MS to affect community-wide negotiations, which are through (a.) the European Presidency, the leader of the Council; (b.) the Council of Ministers, which has the discretion to request the Commission to legislate on a proposal; (c.) the advisory committee, where MS can influence policy-making from the beginning.

At the beginning of the process of introducing the EU-ETS, a majority of the MS held a skeptical attitude or were even resistant to emissions trading. As Skjærseth and Wettestad stated in their research (2010), the UK was one of the MS that showed a positive attitude to emissions trading. Not only in international negotiation of the KP but also in regional and domestic discussions, the UK showed an obviously higher acceptance toward this new market-based reduction approach, emissions trading. Regionally, while the UK held the Presidency of the European Council, compared with the next European Presidency of Austria, the UK was relatively enthusiastic about emissions trading. Having said that, the fact that the UK had developed its own United Kingdom-Emissions Trading Scheme (UK-ETS) can be seen as the proof of its willingness to accept emissions trading nation-wide rather than community-wide. Also, the UK was opposed to the mandatory characteristic of the EU-ETS, preferring a voluntary and reward-style framework like the UK-ETS (Hill, 2006).¹⁰ Although it is hard to find a direct connection between support for international emissions trading from the UK and its experience of domestic emissions trading, it is still safe to describe the UK as the leading state to embrace the emissions trading framework being built in the EU.

In addition to the UK, Denmark, Sweden, Ireland and the Netherlands also joined the group with a relatively positive attitude to emissions trading. The Danish

¹⁰ More on the comparison of the different styles of ETS between the EU and the UK can be found in Chapter 4.

government tried to draft a domestic emissions trading framework for electricity sectors in 1998. Meanwhile, the rest of the countries mentioned above were working on preparations for building an emissions trading market. (Oberthür and Tänzler, 2007, cited by Skjærseth and Wettestad, 2010).

On the other hand, because traditional environmental policies are command-and-control regulation and Voluntary Agreements (VAs), Germany, as the biggest GHG emitter and one of the most influential MS of the EU, belonged to a laggard group with respect to the EU-ETS.¹¹ Governmentally, Germany maintained its skeptical attitude in opposition to emissions trading in the first period, while German industries were reluctant to join the mandatory emissions trading framework, which might have caused higher abatement costs (Skjærseth and Wettestad, 2010).

B. The new accession countries (i.e. the Central and Eastern European Countries, or CEECs)

Compared to the EU-15, the new accession countries played little part in the EU-ETS initiation and negotiation process, because they were not yet EU MS at that point. In other words, these new MS could not show their needs, interests and preferences to affect the ET Directive. On the other hand, these new accession countries are parties to the UNFCCC and also listed in Annex B of the KP as Economies in Transition (EITs), which means they have their committed reduction targets individually (Skjærseth and Wettestad, 2008b). However, after the failure of the Council for Mutual Economic Assistance (COMECON) and the collapse of the Soviet Union, the economies and industrial development of these Central and Eastern European countries collapsed in the 1990s, and subsequently, their greenhouse gas emissions dropped by 22.6% from 1990 to 2001 (Parker, 2008). Therefore, most of these new accession countries had no worry about their commitments under the Protocol, and even had approximately 100 million tonnes of CO₂ allowances surplus (Hot Airs¹²) under the KP (Hill, 2006: pp.

¹¹ Details about German climate governance can be found in Chapter 5.

¹² The 'Hot Airs' issue mainly refers to those Assigned Amount Units (AAUs) credits given for the GHG emissions reduction among the former Soviet Bloc countries since 1990. These were over-generously given to Russia as an incentive for them to sign the Kyoto Protocol. After the massive restructuring and de-

398), but in the meanwhile, they also expected to stimulate their economies and elevate their industry and technology with investment from Western Europe by integrating into the EU.

Under these circumstances, the new accession countries, with the help of ‘Hot Airs’, should have had more leverage to negotiate in environmental policies, for example the ‘Interim Committee’ in late 2002. However, before these countries, as the observers, were included in the second reading of the ET Directive in the Parliament and the deliberation in the Commission in 2003, most of essential parts of the ET Directive had already been agreed by the EU-15 in December 2002 (Skjærseth and Wettstad, 2007). In the end, it is safe to say that they had relatively little opportunity to affect the ET Directive. Thus, though Skodvin et al. (2010) stated that either possessing the resources needed by the decision-makers or being agenda-setters or veto-players can give the target group more capability to influence policy options, the outcome for these new accession countries can be seen as a counterexample: they seemed to control the resource needed by the decision-maker (EU) but had barely any impact on the ET Directive negotiation.

Among these new accession countries, in the early stages, only the Czech Republic and Slovakia showed a clear positive attitude to emissions trading. Others like Poland, Hungary, Malta, Latvia and Lithuania remained relatively critical of emissions trading. Poland has exercised strong opposition to climate policy from the EU. For the countries in transition, economic recovery and industrial modernisation remained at higher priority than tackling climate change and reducing GHG emissions. So it is no surprise that most of these new accession countries argued that the EU-ETS failed to take their differences and demands into consideration (Skjærseth, 2010).

(3.) Non-Governmental Organisations (NGOs)

Apart from the common Environmental Non-Governmental Organisations (ENGOS), the main actors among Non-Governmental Organisations (NGOs) in the EU-ETS are energy intensive and electric power generating industries (Skjærseth and Wettstad, 2009). In order to show their influences more clearly, the ENGOS and the

industrialisation of many countries in transition, the huge amount of the surplus AAUs became a way for the transition countries to buy their way out of taking action to address climate change.

industries will be illustrated separately in more detail. Starting with the ENGOS perspective, originally they tended to oppose using emissions trading because of normative concerns over equity and morality. But after the 1990s, the Commission started making direct or indirect approaches to include the voices from these ENGOS; for example, the Commission began to consult NGOs or related expertise on the basis of the principle of Subsidiarity. With the help of a number of working groups of ECCP I and II, several ENGOS changed their position to support emissions trading, for example, the Climate Action Network Europe (CAN) (Skjærseth and Wettstad, 2009). In other words, the ECCPs not only built up the necessary concepts and direction of the EU-ETS, it also transmitted information and knowledge to ENGOS, and persuaded them to change their position to support emissions trading and believe in the environmental efficiency it could provide. Besides, Skjærseth and Wettstad (2009) further mentioned that these ENGOS favoured a system with an EU-level overall cap, allowance allocation with auctioning, and clear and strict limitation of the using of the credits from the flexible mechanisms.

Considering that the EU-ETS is focused on the sectors and installations' GHG emissions reduction rather than the governments' reduction, it is quite rational to find lobbying and influence from the industry within the process of building up and implementing the EU-ETS. Markussen and Svendsen (2005) investigated the Green Paper before and after industry lobbying. They confirmed that these interest groups had significant influence on the final design of the EU-ETS.

Among all ETS sectors, the power-producing industry remains the crucial one when considering the sensitivity of the 'energy issue' that is linked to both economy and politics. At the EU level, the industry association is grouped together by Eurelectric, which has not only been active in initiating, negotiating and revising the EU-ETS but also once ran its own emissions trading practice before it started implementing the EU-ETS. Eurelectric maintains a positive attitude to emissions trading as long as the system meets its preferences, which include: CAT system, free allocation at national level in the short term, but allowances should be allocated by community-wide auctioning in the long term, while unlimited and unrestricted global credits can be imported (Skjærseth and Wettstad, 2009). Another example may be the aluminium and chemical sectors that are represented by Eurometaux and the European Aluminium Association (EAA) and the European Chemical Industry Council (CEFIC) respectively. With the argument of worrying EU-ETS implementation might threaten their competitiveness in global

trade, the EAA and the CEFIC successfully lobbied to be excluded from the first phase of the EU-ETS.

Apart from the EU-ETS coverage negotiation, the allowance allocation by grandfathering in the initiation stage of EU-ETS represented another success for what MS pursued and was widely supported by some domestic industries. On the one hand, it was owing to the rent-seeking position of the industry lobby. Böhringer and Rosendahl (2009) used game-theoretic investigation to show that the lobbying from the industry indeed influenced the MS National Allocation Plans (NAPs), especially in Phase I but also in Phase II. On the other hand, since GHG reduction is highly reliant on these actors being involved, when the government cannot retain its industrial and technological advantage without cooperation from industries, the influence of these ETS sector associations tends to increase.

2.3 The Emissions Trading System in the Europeanisation Stage: 2000-2007

2.3.1 The foundation of the EU-ETS: the European Climate Change Programmes (ECCPs)

The critical institutional set up to collect all stakeholders' preferences and especially to reach consensus on emissions trading in the EU is the ECCPs and its six Working Groups (WG). Several academic articles have affirmed the contribution that ECCPs (and especially its WG 1) made to building the broad consensus for internalising emissions trading in the EU (Zapfel and Vainio, 2002; Lefevere, 2005; Dreger, 2008; Skaereth and Wettstad, 2009; Rusche, 2010). Skaereth and Wettstad (2009) saw the ECCPs as a place where every stakeholder learned and legitimised the principles of emissions trading in the EU, a process in which the Commission played an entrepreneurial role. Braun (2009) argued that the ECCPs, as 'an informal issue-specific policy network', successfully shaped a clearer EU-ETS design. Rusche, (2010) argued that the smooth adoption of the ET Directive at a later stage could be attributed to the ECCPs' building of consensus and gathering of support from all its stakeholders. All this literature can reaffirm the role of ECCPs in shaping and influencing the way the EU-ETS was constructed, but the crucial thing that needs to be unpacked is who the major actors were and what they did during the negotiations in the ECCPs.

The major tasks that the European Commission set for the ECCPs were (European Commission, 2003; Rusche, 2010):

- To identify the wide range of expertise and elements that the European Climate Change strategy needed in order to reach its commitment under the KP;
- To build consensus about what measures to implement.
- To increase the international credibility of the EU in the area of climate change;

And for the first Working Group (WG1), the major task set was to build a community-wide framework for emissions trading and provide recommendations for related regulation or measures for the Commission.

In order to collect as wide a range as possible of expertise and potential measures, the participants in the crucial WG 1 for 'Flexible Mechanisms' were drawn from the Commission (DG environment, DG Transport and Energy, DG Enterprise and DG Economic and Financial Affairs), national governments (Germany, France Sweden and the UK), industry (Eurelectric, German *Bundesverband der Deutschen Industrie* (BDI) and the Emissions Trading Group from the UK) and ENGOs (e.g. WWF, CAN Europe). Apart from the 'inside input' from within the EU, WG1 also included outside expertise from the US Environmental Protection Agency, which provided the US' experience of tackling sulfur oxides (SOx) by emissions trading. According to Rusche's (2010) research, this outside input supplemented EU's technical details on designing the EU's emissions trading system. With very few issues of disagreement, WG1 reached a high level of consensus on building up a mandatory EU-wide scheme using absolute quotas but retaining potential access for international credits.

However, back to the core concern that this thesis intended to analyse, Germany and the United Kingdom (UK) clearly showed conflicting attitudes towards emissions trading from different levels in WG1 of the ECCP. The German government and its industry delegate (BDI) showed opposition to building up a mandatory EU-wide emissions trading scheme, while the British government, the British Emissions Trading Group and the Advisory Committee on Business and the Environment (ACBE) advocated the idea of building an EU emissions trading scheme. Dreger (2008) also pointed out the significant support for setting up the EU-wide emissions trading in WG1 from the London-based think-tank, the Foundation for International Environmental Law and Development (FIELD). Though Germany and the United Kingdom were both well represented by corresponding government and industry associations in WG1, it seems as though the synergy aggregated from the British government, industry and

the British NGOs with their emissions trading expertise helped the United Kingdom's national preferences to be incorporated and updated more easily and clearly. From the Commission perspective, it not only gained the expertise it needed for developing emissions trading in the EU but also relied on the UK's comprehensive support to strengthen the consensus and credibility around its climate change strategy.

2.3.2 The stepping stone of the EU-ETS: the Green Paper

Since the European Council approved the UNFCCC with Directive 94/69/EC and the KP was accepted with Directive 2002/358/EC in 2002, the EU was obligated by its commitment under the KP and its internal BSA that had been approved in 1998. More precisely, with the 'EU bubble' approach, the EU-15, as a whole, needed to reduce its GHG emissions by 8% compared with its 1990 baseline amount before the end of 2012 (Barker, 2001). The need for a proposal from the Council to play an active role in making the Commission provide an achievable solution to reduce GHG emissions and minimise the potential hazard to the common market then became more urgent.

However, the proposal of a community-wide energy/carbon tax was strongly rejected by some MS and industry federations. As for the MS, they were not willing to surrender their financial autonomy to the EU. And for the industries, they preferred emissions trading rather than paying a tax because the former adds to their tradable assets, whereas the latter may decrease the revenue of companies. For the EU, with the common market developing, the Commission definitely did not encourage the inconsistent carbon tax at state level. So, the likelihood of including emissions trading in the EU's environmental policy agenda was therefore increased. But considering that detailed regulation of global emissions trading was not yet in place, and the JI did not start until 2008, the Commission had shown a clear preference for developing a community-wide and EU-style system of emissions trading.

The *Green Paper on GHG Emissions Trading within the EU* was published in 2000. It appealed for a wide discussion and negotiation about this market-based approach to reducing GHG emissions, not only in legislative, economic and policy aspects, but in respect of equity concerns as well. Some ENGOs continued to worry about whether or not people should trade in pollution (Skjærseth et al., 2008). Nevertheless, the main purpose of the Green Paper was to start discussion on this new policy instrument that needed to be decided on to build and implement a community-wide ETS (Ellerman et al., 2010). Therefore, after the Green Paper was adopted, the

EU-ETS had become the main approach to help the EU meet its target under the KP.

Within the Green Paper, two core issues were demonstrated. Firstly, it mentioned the fundamental components required to build an emissions trading framework in the EU. The Green Paper acquiesced in the aim of building an EU-wide ETS but paid more attention to ‘how’. The Commission stated that a more mature option was to construct a community-wide framework that left some room for MS. In addition, the criteria set by the Green Paper included environmental effectiveness, economic efficiency, potential effects on competition and policy feasibility and alternatives, which led to the Large Combustion Plant Directive (LCPD) (88/609/EEC). The Amendment to the LCPD (94/66/EEC) and Integrated Pollution Prevention and Control (2008/1/EC) then offered the appropriate references for sector coverage (European Commission. 2000a, Skjærseth et al., 2008). Secondly, the Green Paper also addressed possible approaches to minimise the controversies around the new emissions trading framework, existing policies and affected regulations. The Green Paper also supported the idea of measures or policies toward non-regulated sectors which could provide the possibility or incentives to these sectors to opt in voluntarily in the long run. During this, European integration continued, so there was a wide discussion on how to design the emissions trading framework with the various concerns of differentiation among MS.

Besides the broad approach to deciding the scope of targeted obligated sectors, several more specific issues about the EU-ETS were intensely discussed, including the cap setting and the allowance allocation preferences. First of all, the sectors that the Green Paper focused on were the power sector and heavy industry. This means that since the Green Paper, the EU has planned to reduce GHG emissions from the sources, i.e. downstream to the end user. But the more efficient way to control emissions may be upstream, which entails that regulation focus directly on the importers or even the entities that produce the materials that emit GHG, e.g. fuel refinery entities. Nevertheless, the financial ministers from individual MS, as well as ENGOs, maintained an opposite opinion (Ellerman et al., 2010). Also, from the EU perspective, starting to build up the regulations through the downstream approach (with the ease of identifying the scope of emitters) was easier and more practical than including all the upstream actors at once. This is because the latter might have led to the EU facing even stronger resistance and rejection at both the state level and industry level, which might have delayed the policy-making, blocked the political negotiation and threatened the

growth of the common market at the initial stage.

As mentioned above, one of the purposes of the Green Paper was to support the building of a community-wide emissions trading framework by harmonising the existing regulations rather than distorting or undermining them. Once the upstream emissions trading was in place, a 'double regulation' would happen in several MS that had already set a tax on fossil fuels. This would not only undermine the national tax system, but also possibly threaten the economies by charging the added tax with the energy price. In the meantime, it still might not increase the environmental effectiveness of reducing GHG emissions in the energy sector. Besides, once the issue was linked with energy issues, the political tension would be more intense and the negotiation and bargaining costs would increase hugely, which was definitely not the EU institutions' intention at that time. Therefore, with the concerns of political feasibility and steady economic development in the common market, the downstream style of emissions trading in the EU was agreed upon in the Green Paper.

Second, regarding the cap setting, the Green Paper strengthened the importance of a centralised cap, which could save significant costs not only at national level, but also for the EU as a whole. Last, but not least, the highly controversial issue of the approach to allocating allowances took a considerable time to negotiate in the Green Paper. In very broad terms, as Ellerman et al. (2010) noted, although the Green Paper asserted that the way of allocating the allowances would not affect the environment, auction was 'technically preferable', as it would not only generate revenue, but reduce the negotiation cost both at the EU and at the national level. In conclusion, it is evident that after the approval of the Green Paper, the key features of the community-wide ETS were already decided, at least from the point of view of the EU institutions. These are 'a centralised cap, allowance allocation by auctioning and the regulation scope to include the energy sector and heavy industry.'

2.3.3 The initial design of the EU-ETS: the ET Directive (2003/87/EC)

The EU created the EU-ETS through Directive 2003/87/EC, i.e. the ET Directive, which was adopted in 2003 as the main approach to fulfilling the EU's target under §3.2 of the KP.¹³ However, whether the KP would come into force was still uncertain when the ET Directive was being negotiated. With the political pressure to secure the KP, the time pressure coming from §3.2 of the KP (United Nations, 1998:3), and the unwillingness to undermine the unsteady and still growing acceptance of the EU-ETS, the European Commission decided to 'temporarily' abandon the potential link with other project-based mechanisms constructed by the KP at this stage, i.e. the CDM and JI.¹⁴

After the Commission submitted the first draft of the ET Directive in 2001, intense negotiations took place among the Council, the Parliament and the Commission. With the help of external epistemic community consultation and several successful internal ETSs operated by European oil and gas sectors (Skjærseth et al., 2008) and national states' emissions trading experience (such as the UK-ETS in 2002), the Commission fulfilled the basic design of a community-wide emissions trading framework and then proclaimed the ET Directive (2003/87/EC) in 2003. The following are the key features of the final EU-ETS designed by the Commission:

A. Cap-and-Trade (CAT)

The original model of 'CAT' emissions trading shows the regulator setting the overall caps, which are also called compulsory targets, for the obligated sectors (or installations) and issuing the allowance as a legal right to emit the gases limited by the framework. The obligated objectives are to meet the cap in the commitment period with selling or buying of the allowances between under-emitters and over-emitters (Hill, 2007; Dürr, 2007). Thus, scarcity of allowances was created to make the allowances market function while producing incentives to invest in reduction technology.

¹³ Article 3 (2) stated, 'Each party included in Annex I shall, by 2005, have made demonstrable progress in achieving its commitments under Protocol' ((United Nations, 1998:3).

¹⁴ In order to providing the intact literature review with focusing on the EU-ETS's policy design in this stage but sustaining any possibility of discussing about the impacts of credits on EU-ETS, the brief literature review toward Linking Directive therefore moved to the Appendix.

To meet the cap set by the regulator, the obligated entities had several ways to buy the allowances, e.g. bilaterally with other emitters, through a broker or in the trading platform (Engles, 2009; Hintermann, 2010). A deterrent penalty for non-compliance was necessary and, based on the Green Paper, the penalty would apparently be higher than the compliance cost. The final decision on penalties in the ET Directive was €40 per ton of carbon dioxide (CO₂) in the trial phase and €100 per ton of CO₂ in the second phase (Skjærseth et al., 2008).

Following the EU-ETS handbook (Commission, 2015), several key features of the CAT type of emissions trading provide the appeal that stimulated EU institutions to favour it, which are:

- **Certainty about quantity:** By setting the cap for the overall maximum of GHG emissions in a set time period, from the regulator's perspective, it gives certainty to the GHG emissions commitment. From the regulated sectors' point of view, it also shows certainty about what volume of GHG emissions needs to be eliminated and the foreseeable need to take action on GHG emissions reduction.
- **Cost effectiveness:** Under cap setting and carbon pricing by issuing allowances, the carbon price is decided by supply and demand in the market but remains technologically neutral to regulated sectors. The regulated sectors may then have the flexibility to reduce GHG emissions according to where the abatement measures cost least.
- **Revenue:** The revenue earned in cap-and-trade type emissions trading can be divided into two parts, which are the revenue from selling allowances in bilateral trade (i.e. between under-emitters and over-emitters); and the revenue from regulators' auctioning allowances directly. To some extent, the certainty of getting revenue (following the theoretical design) indeed stimulates the higher willingness and support from both regulators and regulated actors when they compare emissions trading to other policy instruments.
- **Minimising the risk to MS' budgets:** By becoming part of a community-wide emissions trading system covering around 50% of total EU emissions, MS can effectively reach their commitments under the KP. As compared with the scenario without emissions trading, the major help from creating at EU level the emissions trading system that specifically tackled the GHG emissions from energy and

energy-intensive sectors is to remove the pressure in policy design and negotiation from the MS to the EU level (i.e. lower administrative cost).

B. The timeframe, scale and coverage of EU-ETS

Based on the initial EU-ETS design, the first trading period lasted from 2005 to 2007, and was called ‘learning-by-doing’, which was intended to improve on the lack of emissions trading practices before the start of the KP commitment period. The second phase coincided with the KP commitment period from 2008 to 2012.¹⁵ Later in the CEP in 2008, the timeframe then set Phase III from 2013 to 2020 and Phase IV from 2021-2028, which was intended to increase the stability and predictability of regulation to benefit long-term green investment.

The scale of regulated sectors included: i) Power stations and other combustion plants ≥ 20 MW; ii) Oil refineries; iii) Coke ovens; iv) Iron and steel plants, Cement clinker Glass; v) Lime; vi) Bricks; vii) Ceramics; viii) Pulp and Paper. When it comes to the scale of regulated gas, only CO₂ was listed as a regulated target for reduction at the beginning of Phase I. After the second phase, all six GHGs regulated by the KP were included in the EU-ETS’ pollutant reduction target.¹⁶ Starting from Phase III, the targeted gases included in EU-ETS are CO₂, N₂O emissions from all nitric, adipic and glyoxylic acid production, and PFC emissions from aluminium production.¹⁷

Since the EU-ETS started functioning in 2005, it has covered at least 11,500 power and industrial plants among 28 MS (Parker, 2008; Wrake et al, 2012). More than 500 million people have been involved in or affected by EU-ETS (Wrake et al, 2012). The GHG under the scope of EU-ETS accounted for 45% of total GHG emissions in the EU (Erbach, 2015). From the global carbon market point of view, these make the EU-ETS the largest emissions trading system in the world, which also strengthens the EU’s influence in the global carbon market.

¹⁵ After the revision in 2008, an eight-year compliance period was accepted, so the third period will span from 2013 to 2020 and the fourth will span from 2021 to 2028 (Peeters, 2008).

¹⁶ According to the Appendix A of the Kyoto Protocol, the six regulated GHGs are namely: Carbon dioxide (CO₂); Methane (CH₄); Nitrous oxide (N₂O); Hydrofluorocarbons (HFCs); Perfluorocarbons (PFCs); and Sulfur hexafluoride (SF₆).

¹⁷ Details can be found in the EU-ETS handbook published by the European Commissions in 2015.

Since then, the scale and the coverage of EU-ETS have continued to expand, in terms of the number of MS and the increasing number of regulated sectors. In Phase II, non-EU countries from the European Economic Area (EEA) joined the EU-ETS, namely Norway, Iceland and Liechtenstein. In 2012, at the end of Phase II, the EU-ETS started including the aviation sector. However, the plan to include the aviation sector triggered lawsuits and pressure from the EU's trading partners. Eventually, the Commission made the decision to "Stop the Clock", which temporally exempted international flights arriving and departing from the EU from the EU-ETS during 2012. It effectively put the law on hold and waited for the International Civil Aviation Organisation (ICAO) to design its own market-based mechanisms (MBMs) that will include all aeroplanes at the global level (Carbon Plus, 2016).

C. The European Union Allowance (EUA)

The emissions allowance issued and traded in the EU-ETS is called 'European Union Allowance (hereafter referred as the EUA or the allowance)'. And the issuing of allowances is the crucial part of the whole emissions trading concept, which directly connects to the credibility of property right setting by the issuers, i.e. the Commission in the case of EU-ETS. Each EUA represents the right of the owner to emit 1 ton of CO₂.

The total numbers of EUAs that are issued in the set period, which aggregates all 28 MS' allocation plans (in the first and the second phase), are equal to the ceiling of the EU-ETS (the Cap). In this way, it also clearly means that the numbers of allowances in the first and the second phase of the EU-ETS are mainly decided by the MS. Apart from this, there are two basic limitations (Wrake et al., 2012): i) the total numbers of allowances should be lower than the projected emissions under business-as-usual (BAU).¹⁸ ii) The MS need to show that their projected allowances allocation can achieve their reduction targets under the EU Burden Sharing Agreement and the KP.

¹⁸ According to the EEA (2001:20) report *Scenarios as tools for international environmental Assessments*: 'BAU is a baseline scenario that examines the consequences of continuing current trends in population, economy, technology and human behaviour up to 2025.' However, Fei and Xu (2012) assessed *the Definition of Business as Usual and Its Impact on Assessment of Mitigation Efforts*, the clear definition toward the BAU has not been consistent between developed and developing countries, and it is often and commonly referred as the 'without policy' scenario with a fixed based year.

D. The National Allocation Plans (NAPs)

The essential difference between theoretical design by textbook and the EU style of emissions trading lies in the cap setting. By setting the EU cap through aggregating all MS' national caps in the initial design, this decentralisation feature helped the EU-ETS quickly be accepted by MS before 2005. Contrary to the original emissions trading theory that the cap is set by the regulator, the cap of the EU-ETS is set by the MS through their National Allocation Plans (NAPs), which can be seen as a compromise that the EU and MS reached under the political and time pressures. This characteristic then increases the influence from MS on deciding the ceiling.

On the other hand, according to Article 9.1 of the ET Directive (European Parliament and Council, 2003):

For each period referred to in Article 11(1) and (2), each Member State shall develop a national plan stating the total quantity of allowances that it intends to allocate for that period and how it proposes to allocate them. The plan shall be based on objective and transparent criteria, including those listed in Annex III, taking due account of comments from the public [...].

To make sure the community-wide cap was still lower than the emissions under BAU and would achieved the intended emissions reduction, the Commission included 11 guidelines in Annex III of the ET Directive and provided the reference for MS to design their NAPs. For example, the NAPs should be detailed with the reduction target under the BSA and the KP, total numbers of allowances per year to be allocated, the approach to EUA distribution in macroeconomy (among the sectors) and microeconomy (among the installations), prospective reduction methods and coverage of obligated objectives. According to the rest of Article 9.3 of the ET Directive (ibid):

Within three months of notification of a national allocation plan by a Member State under paragraph 1, the Commission may reject that plan, or any aspect thereof, on the basis that it is incompatible with the criteria listed in Annex III or with Article 10. The Member State shall only take a decision under Article 11(1) or (2) if proposed amendments are accepted by the Commission. Reasons shall be given for any rejection decision by the Commission.

This meant the Commission had the right to reject the NAPs providing the reasons; then the MS could not allocate allowances until those parts resulting in the rejection were

removed from their NAPs. Even so, in practice, whether the Commission had the legal authority to approve or reject NAPs remained debatable not only in academia (Ghaleigh, 2009; James, 2009; Peter, 2013) but also in lawsuits in the ECJ, as in Case T-178/05 (UK v. the Commission), Case T-374/04 (Germany v. the Commission), and Case T-183/07 (Poland v. the Commission). Nevertheless, allocating the allowances through the NAPs drafted by MS is a unique feature of an EU-style ETS, because in the United States' Acid Rain Program for trading SO₂ permits, both the cap and allocation approach were regulated at the federal level.

E. The Allocation Approaches set by the EU-ETS

Two factors determine the scarcity of allowances in the emissions trading market: one is the ceiling setting, and the other is the approach to distributing allowances. Both of these are key issues in NAPs. Many EU-ETS studies have focused on the allocation approaches and efficiency analyses (Barker et al, 2001; Weishaar, 2007; Skjærseth and Wettestad, 2008; Parker, 2008; Yang and Wang, 2010). Some have focused on technical comparisons, which means that their research tended to compare the different effects from the different allocation approaches.

However, legally, according to Article 10 of the ET Directive, MS were obliged to allocate at least 95 per cent of the allowances free of charge during the first phase of the EU-ETS (2005-2007). In the second phase, which began on 1 January 2008, it was ruled that at least 90 per cent of the allowances must be allocated free of charge. This implies that MS could sell or auction a maximum of 5 to 10 per cent of their allowances when entering the second stage (European Commission, 2003). Under this circumstance, during the first trading period (2005–2007) of EU-ETS, only a few MS used their allowances for auctioning (Denmark with 5%, Hungary with 2.5%, Ireland only 0.75% and Lithuania with 1.5% of their total allowances) (Hoffmann, 2006). In the second phase, the MS that used the option of auctioning allowances were Germany (< 9%), the United Kingdom (< 7%), the Netherlands (< 4%), Ireland, Hungary, Lithuania, Austria and Belgium (Perdan and Azapagic, 2011). Thus, it is apparent that the majority of allowances in both Phase I and Phase II were allocated mainly by grandfathering, i.e. allocating the allowances for free on the basis of historic data (Weishaar, 2007; Alexeeva-Talebi, 2011). Also, MS needed to report their ways of projecting historic data in the NAPs, which included input-based data, output-based data and emission-based data. However, under the time pressure of submitting NAP

drafts to the Commission, the common problem of lacking accurate historic emissions data contributed to MS' over-generous calculations and EUA allocations.

Some of the EU-ETS literature has also noted the allocation of allowances by auctioning, in which they compared two types of auctions, static and dynamic (Hofmann, 2006). Static auctions are single-round while dynamic auctions are multi-round. The most common forms of static auctions are uniform-price auctions and pay-your-bid auctions. The difference between these two is in the way that a winning bid is determined and the profit from the auction.

Apart from the grandfathering and auctioning approaches, a supplementary approach widely used in the first and second phases was the benchmark, i.e. a 'standardised level for a pollutant related to an input or output for a given type of technology and production process' (Spash, 2010:180). This approach was largely used to supplement the grandfathering approach in the second phase to assist in determining the new entrants' projected GHG emissions.

The methodology of allowance allocation can have a significant effect on the states' as well as the bidders' profitability. Parker (2010) states that the EU prefers to establish an EU-level, single-round, sealed-bid, uniform-price, and weekly auction platform. But, from the viewpoint of MS, several different concerns result in reluctance toward allowances auctions. For instance, Priebe (2007) explains concerns with equity, and the inability of some covered entities to afford the additional cost of purchasing allowances, which may lead to a subsequent decrease in states' or industries' competitiveness. Similarly, economic concerns are described in Parker (2010) about potential drag on sectors' economic performance caused by the up-front cost of an auctioned allowance.

Up to this stage, from the EU-ETS' allocation approaches' initiation, negotiation and development, it is not difficult to find that wider discretion was given to all the MS. Firstly, by starting allowance allocation free-of-charge in the grandfathering approach, the EU was able to increase acceptance and support from its MS and obligated sectors (Betsill and Hoffmann, 2011). From the regulated sectors' point of view, the compliance cost in grandfathering was lower than in auctions (Clio, 2010). From the MS perspective, with grandfathering the potential distortions of the internal market could be largely avoided at the beginning of the EU-ETS (Parry et al, 1999; Weishaar, 2007; Peeters and Weishaar, 2009). Therefore, it is understandable that, as Ellerman

et al. (2010) argued, the EU-ETS design in its initial stage (also defined as Europeanisation stage in this study) directly mirrored the political reality in the EU.

2.3.4 The pilot phase of the EU-ETS: 2005-2007

As the main purpose of the ‘learning-by-doing’ period from 2005 to 2007 was clearly set by the Commission (Commission, 2006, 2008, 2016), the EU tried to let the whole community prepare for emissions trading before the KP commitment period started. More precisely, the first period of EU-ETS was not expected to reduce the amount of GHG emissions but mainly designed to develop the infrastructure and experience needed for the later legally binding period under the KP (2008-2012) (Perdan and Azapagic, 2011). Parker (2008) commented on the first phase with positive concerns as follows:

- Complete the setup of the infrastructure of the EU-ETS.
- Smoothly connect the project-based flexible mechanisms of the KP by the Linking Directive (2004/101/EC).
- Improve or add the GHG reduction investment concerns into corporations’ behaviour and decision-making.

Also, as mentioned in previous paragraphs, at least 95 per cent of allowances were freely allocated to installations in this period; following Zapfel’s calculation (2007), if the average allowance price varied from €10 to €20 in the trial phase, the EU-ETS allowances would become the asset of allocated installations with a total value of approximately €22 to €44 billion. This huge asset played a fairly important role in increasing the willingness of all the obligated sectors to join the EU-ETS and ensure a successful Phase I with ‘learning by doing’.

Moreover, for those whose abatement cost was much higher than the price of buying allowances from others, the EU-ETS would provide a cost-efficient way to reach their reduction target by buying allowances and the installations selling surplus allowances could receive additional assets to invest in reduction technology (Weishaar, 2007). Also, from the MS perspectives, the caps could be reached in a more economically efficient way, jointly but with domestic action as a win-win solution. Then, from the viewpoint of the global carbon market, as Perdan and Azapagic (2011) noted, in 2005, at least 362 million EUAs were traded with a value of around 7.2 billion.

Thereafter, the traded number of total allowances increased dramatically: 1 billion in 2006, 1.6 billion in 2007 and almost 3.1 billion when the EU-ETS entered phase two in 2008 (Point Carbon, 2010).

Although the major goal set by the trial phase was to provide the practice of emissions trading operation and test the infrastructure, according to Ellerman et al., (2010), two to five per cent of GHG emissions reduction can be attributed to the EU-ETS implementation. However, several significant drawbacks that were identified from EU-ETS' infrastructure became apparent in phase one and should be further discussed. Though some were complicated with multiple reasons and difficult to investigate or attribute to a single cause, it was still essential to address these problems in order to learn by doing.

A. Over-allocation

The first significant drawback of the first period was over-allocation, which based on different contributors to the literature can have different definitions (Venmans, 2012). But, in general, it means the amount of issued and distributed allowances is much more than the verified emissions data. The widely known reasons are the time pressure of NAPs I submission and the uncertainty of the lack of historical emissions data collection before the first period started. Against this background, 'race-to-the-bottom' became the common strategy of most of the MS when they drafted their NAPs for Phase I. Although the Commission had already cut the EU-15's NAPs by about 4.6 per cent before 2005, numerous researchers (Hintermann, 2010; Parker, 2010; Chevalier, 2010; Venmans, 2012) agreed that the allowance allocation was still too generous in phase I. After the first verified emissions data was released in 2006, due to the over-allocation, the allowance price decreased by more than 54 per cent in a short time and then fell nearly to zero in 2007. As Venmans (2012) also stated, the over-allocation contributed to a decrease in the abatement efficiency, transparency and predictability of the allowance market. Hintermann (2010) also pointed out that the prohibition of banking/borrowing of surplus/insufficient allowances between the first and second periods of the EU-ETS was a problem which worsened with the speed of allowance price falls before the end of Phase I, but on the opposite side of the KP commitment period, this prohibition guaranteed that the results of the trial period would not hamper the EU's enforcement of the reduction under the KP.

B. Windfall profits

Another issue was that the free allocation of allowances caused windfall profits for specific sectors, e.g. the electricity sector. Although free allocation could eliminate doubts about threats to competitiveness and carbon leakage, it was based on the assumption that obligated firms would not pass on the projected cost of allowances to the consumers or the production price. However, in the reality of economic behaviour, the firms would pass on all the projected reduction costs to the end users to maximise their profit, even though their allowances were received without any additional cost (Alexeeva-Taletti, 2011). Throughout the trial phase, the electricity sectors in the United Kingdom and Germany were criticised for gaining windfall profits, and became known as the carbon ‘Fat Cats’.

C. GHG reduction efficiency

GHG reduction efficiency is defined as the verified emissions of GHG subtracted from the amount of GHG under BAU. Although it was believed that two to five per cent of GHG emissions reduction could be attributed to the first phase of EU-ETS, its GHG reduction efficiency was still hard to assess accurately because of missing data before 2005. Thus, the literature on the assessment of reduction efficiency in the trial phase has numerous methodologies for calculating emissions under BAU. In the UNFCCC data assessment, the overall reduction of the first period of the EU-ETS reaches 3.5 per cent; according to the Ellerman et al. (2010) calculation, the reduction reaches 2.4 per cent to 4.7 per cent in 2005. Most estimations of the first period reduction are around 2.5 per cent to 5 per cent (Venmans, 2012).

D. Carbon leakage and the threatened competitiveness

Carbon leakage and the threat to ETS-sectors’ competitiveness are two more major drawbacks, especially after the ‘learning by doing’ phase came to an end and the time arrived for the Kyoto commitment's implementation period. Be it from the technical, academic or even policy aspects, whether the EU-ETS directly led to carbon leakage and decreased the EU’s competitiveness remains a matter for debate.

Carbon leakage, according to the definition by Wrake et al (2012:18), is an *‘emissions increase in countries outside the policy regime in relation to the reduction in emissions in the region under the policy.’* The fundamental causes of carbon leakage are asymmetries in carbon reduction regulation, and the obligated sectors’ rational

choice to maximise their profit through production. For the obligated sectors under EU-ETS, all else being equal, less regulation set on their production means less marginal cost and higher potential profit. Under this circumstance, their competitors located outside the EU-ETS' regime would have an advantage in products competing with products produced in the EU.

However, the measurement of these two problems remains fraught with difficulty. First of all, the definition of competitiveness may differ among different stakeholders in different contexts and in different time scales (Wrake et al, 2012). Secondly, the possible causal factors vary across different industries. Worse still, even changes in trade and investment might lead to leakage. For example, because of high involvement in international trade, the aluminium, iron and steel sectors in the EU are more vulnerable and fail to pass their abatement cost on to their customers, which leads them to argue that they should be listed as having relatively high risk of carbon leakage (ibid). Therefore, how to distinguish the level of leakage resulting from EU-ETS from the leakage resulting from changes in trade and investment remains challenging.

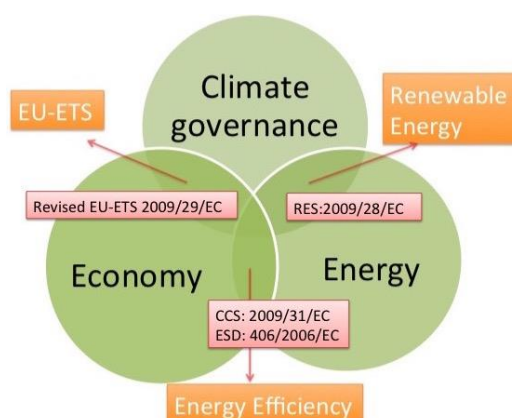
2.4 The EU-ETS in the Centralisation Stage: 2008-2012

2.4.1 Centralising the EU-ETS: the Climate and Energy Package (CEP) in 2008

According to Article 30 of the ET Directive, the Commission needed to make a report to review the enforcement and the results by 30 June 2006. This provided the legal discretion to the Commission to review and revise the EU-ETS, especially after the pilot period of 'learning-by-doing'. Following the co-decision procedure, only when the Parliament and the Council assented could the proposed revision of the EU-ETS be adopted (Skidding et al., 2010). Therefore, in 2008, the Commission submitted a draft of the CEP to the Council and the Parliament. Then, later in 2008, the CEP was approved and proclaimed by the Commission. Internally, the aim of the CEP was to make sure that the EU was on the right track toward a low carbon economy based on EU-ETS, renewable energy sources, energy efficiency and technological innovation (with carbon capture and storage, CCS). Skaereth et al. (2013) argued that by issues linkage among renewable energy, energy efficiency and revised EU-ETS on GHG emissions reduction, the EU could increase the joint gains and facilitate greater political feasibility. Externally, the EU also relied on this ambitious and challenging CEP to show leadership as a model before the 2009 Copenhagen climate meeting (Wettestag, 2014). The clear connection and convincing evidence is shown in Article 28 in the

revised ET Directive, in which the EU pledged to raise the reduction target to 30 per cent if the targeted deal agreed in the Copenhagen climate summit were satisfied.

To tie climate and energy policy more closely together, the CEP therefore combined four legislative proposals, which are the centralised EU-ETS Directive 2009/29/EC, the Effort-Sharing Directive (ESD) 406/2006/EC in non-ETS sectors, the Renewable Energy Directive (RES) 2009/28/EC and the rules for carbon capture and storage (CCS) 2009/31/EC. As can be seen in the Venn diagram of Graph 4, under the burdens/efforts sharing concept with package approach, the revised EU-ETS, located at the overlapped area between climate and economy governances, is seen to be an essential element acting as the ‘front-engine’, which was expected to stimulate both energy efficiency improvement and energy replacement by renewable energy. Under the target of pursuing a low-carbon economy in the EU’s climate governance, two major correlated and overlapped areas to energy governance would be ‘using energy more cost-effectively’ (i.e. the efficiency of using energy) and environmentally-friendly energy (i.e. fossil fuels replaced by renewable energy). This is also the EU institutions' attempt to maximise the ‘joint gains’ by linking climate governance, economy governance and energy governance domains together with three directives and objectives. From the EU’s perspective, the CEP can be described as a political move to further integrate energy policy into climate policy by centralisation within the bigger picture of European integration, whilst helping the EU to strengthen its global leadership. From the MS’ perspective, through burden and effort sharing, they also receive technological and funding support from the EU (such as the ‘economic solidarity’ for the CEECs). Therefore, it seems that by linking issues the CEP successfully included the majority of needs from the major actors.



Graph 4 The theoretical design of EU’s climate governance after the CEP

However, after the Copenhagen records were released and other difficulties emerged, it seems even clearer that the intention of integrating the climate, economy and energy domains to benefit the EU-ETS implementation among 28 EU MS has inevitably sharpened the East-West conflict that has inherently existed in the EU's integration, and also extended the complex process of EU-ETS revision. Skjærseth et al. (2013) suggested that the conflict was because the Commission failed to serve as a vital 'clearing-house' between MS and the EU institutions to resolve the asymmetrical energy-economic interest triggered by the package approach. However, Skjærseth et al. merely insinuated that this is the reason why the Commission has become more influential and tended to rely on extensive consultation and cooperation with MS after the CEP, without clearly pointing out what composed or fueled the asymmetrical energy-economic interest.

As the major focus of this study is on the EU-ETS, the investigation of the 'asymmetrical energy-economic interest' therefore starts from the revised EU-ETS. The main objective of the revised ET Directive by centralised approach is to improve the effectiveness and the operation of the EU-ETS (Clod, 2010), whilst it is also expected to spur the development of energy efficiency and renewable energy. During this re-negotiation process, three key points can be further discussed:

A. More stringent and centralised controls by the Commission

With the insufficient stringency in cap setting in the previous two periods, the reduction efficiency of the EU-ETS is questionable. Thus, starting from Phase III, the cap setting level no longer belongs to MS, while only one cap will be set at the EU level to guarantee the linear GHG reduction of 1.74 per cent per year (Skjærseth et al., 2009). Besides, the high cost of time-consuming negotiation of the NAPs between the Commission and MS in the first phase made the Commission decide to reduce the importance of NAPs, which was more evidence of centralisation in the EU-ETS design. Furthermore, the Commission also decreased the level of using credits with flexible mechanisms.

B. EUA distribution rule change to auction

Similar characteristics of the two former phases of the EU-ETS had 90 per cent of the allowances allocated free of charge (Alexeeva-Talebi, 2011), but with the low efficiency and low effectiveness of free allocation, auctioning was therefore

recommended as the new distribution approach by the Commission in the CEP. Since the beginning of 2013, the first 100 per cent allowances allocated by auctioning pertain to the energy sector, while the remaining sectors need to purchase a minimum of 20 per cent of allowances by auction.

However, after the economic and financial crisis which happened between 2008 and 2009, MS paid more attention to the cost of implementing the CEP. Several CEECs, led by Poland, actively joined the negotiation of revising EU-ETS to ask for further economic aid. Besides, at the industrial level, the energy-intensive industries raised the concern that they might not only have to pay the direct cost of emissions abatement during the production process, but also needed to meet the indirect cost from higher electricity prices. Meanwhile, they had insufficiently passed on these costs through the product price on the global market as well (Skodvin et al., 2010); therefore, they undoubtedly belonged to the disadvantaged group in the EU-ETS. These are the contradictions among the industry, MS and the Commission that happened in 2008.

Therefore, setting up desirable, achievable and rational criteria to exclude or postpone these disadvantaged sectors/states from auctioning in the short term was needed. In the final legislating results in 2008, several criteria were set, which can be seen as the outcome of successful lobbying by the CEECs and the industry:

- a. Ten CEECs, which mainly relied on fossil fuels in power generation, could continue to receive free allowances (Council of the European Union, 2009);
- b. The objective of full auction to the industry was amended to 70 per cent in 2020 (European Union 2009: pp. 49);
- c. An energy intensive industry under the EU-ETS that could prove that its enforcement of the EU-ETS cost more than 5 per cent of its gross value-added and that it suffered from the disadvantage of non-EU trade intensity of more than 10 per cent, could qualify for allowances by free allocation (Council of the European Union, 2009).

However, the inevitable situation was that after the enforcement of the CEP the annual EUA free-allocation would then gradually decrease. Eventually, the derogation of allowance allocation by auctioning in the short term could not ease the urgency for the ETS-sectors to take further measures for GHG emissions reduction in the long term.

C. Coverage expansion

The debate over the coverage of the EU-ETS in the CEP was about adding the aviation sectors into the EU-ETS (Peeters, 2008). But as with the previous experience of adding the chemistry and aluminium sectors in Phase II, it was difficult to negotiate and complete the task in a short amount of time (Parker, 2010). According to the Commission's plan, when each aeroplane left or arrived at an EU airport, no matter if the airline belonged to an EU corporation or not, they needed to pay the bill for the GHGs they emitted. However, the idea of adding aviation sectors into the EU-ETS was criticised and questioned not only by researchers, but also by other non-EU countries like China, India, Russian and the United States (Black, 2012). In addition to concerns connected with discrimination that could lead to trade disputes, the legitimacy of the plan to expand the binding scope to airlines outside the EU was questioned as well. As Article 2 (2) regulated in the KP:

'The Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organisation and the International Maritime Organisation, respectively (COP3, 1995)'

and Article 3 (5) in UNFCCC:

'[...] Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade (COP1, 1992).'

Therefore, in the end, the EU had no choice but to postpone the extension of aviation emissions trading rules in order to cease the pressure received from around the globe, and took the decision to "Stop-the-clock" in 2012.

2.4.2 The second phase of the EU-ETS: 2008-2012

Despite the global financial crisis which happened in 2008, the EUA price was apparently much steadier during the second phase than the first phase, averaging from €10 to €15 per ton of CO₂ (Chevallier, 2010). After the first phase of enforcement, the one-off hurdles of coverage identification and data collection were overcome (Ellerman et al, 2007). In addition, the project-based flexible mechanisms started functioning in 2008, which, more or less, adjusted and stabilised the emissions trading market in the EU (Chevallier, 2010). Ultimately, according to *Carbon Market Data* published in April 2010, the outcome of GHG emissions reduction was more efficient because of the economic recession in Europe, and the reduction had already reached 3.3 per cent and emissions had decreased by 10.2 per cent compared to the 2008 level.

However, Gulli's (2008) analysis concluded that, although the EU had indeed learned much from the preceding period and made several improvements by adopting the revised ET Directive in 2008, there were still many unsolved problems and even new ones that emerged in the second period. Additionally, because the second phase coincided with the KP commitment (2008–2012), the MS and the EU institutions had to make further efforts to reach the target regulated by both of the BSA and the KP. Against this background, the more stringent projected cap settings, allowance allocation and the strategies of using credits under the Linking Directive became essential for all stakeholders in the EU-ETS.

A. Over-allocation

Several reasons can explain why the problem of over-allocation largely improved in Phase II compared with Phase I. First of all, the data updates collected each year during phase I directly assisted the MS' projected allowances allocation in drafting NAPs for Phase II. Secondly, a series of revisions to the ET Directive made in the CEP in 2008 strengthened the discretion of the Commission and allowed the EU-ETS to be more centralised, which ensured the cap-setting and the scarcity of allowances. Almost all MS were asked to reduce their caps in their NAPs II, resulting in an overall decrease of 199.8 Mt of CO_{2e} in the final EU cap (Gulli, 2009).

B. Windfall profits, carbon leakage and the threat to competitiveness

Referring to the claims made by Wrake et al (2012), the windfall issue resulting from the EU-ETS can be divided into two types. One type is where firms received

windfall profits directly by receiving more allowances than their actual need. The second type is where firms received windfall profits indirectly by passing the costs of reduction through to the customers, when actually they got the allowances for free. Following the lessons of Phase I, the Commission's cap-setting was much more stringent, and the former type of windfall problem was largely eliminated at this stage. However, the latter type remained unresolved in Phase II.

The major reason for this came from the rising electricity price, which included the projected cost of emissions allowances for fossil fuel refining or combustion. For those energy-intensive ETS-sectors in particular, the disadvantage of EU-ETS regulation is double: first, directly, from the cost of the reduction required to meet the target, and secondly via the higher electricity price. Based on the analyses of several researchers (Bunn and Fezzi, 2007; Fell, 2008), Wrake et al (2012) affirmed that 60–100 per cent of the CO₂ price was passed through to electricity consumers. This issue was related to the electricity price and the energy mix of electricity production, which made the level of sensitivity higher and the negotiation to improve or adjust more difficult, because the accompanying political and economic consequences are more significant than the direct cost of GHG reduction. Once certain energy-intensive ETS-sectors predicted the potentially disadvantaged situation they might face, as rational economic actors with the goal to maximise profits, these firms started to consider relocation or reinvestment. Eventually, the outcome contributed to higher probabilities of carbon leakage and the decrease of industry competitiveness.

C. Increasing uncertainty of regulations

Although the revised ET Directive largely improved several drawbacks and problems found during the trial period, some uncertainties still remained and became even more serious problems in the second phase. Examples include the lack of clear regulations toward the offsets under the Linking Directive, and the lack of common rules for both new entrant reserve (NER) and the closure (of installations). Also, after it was decided in the CEP to change the allowance allocation to auction, the problem of how to design the EU's allowance auction platform became another huge uncertainty in the EU-ETS. However, the Commission had only provided principles, suggestions and information on impact assessments with regard to the approaches to be taken by its MS to build auction platforms at state level. Until 2010, the EC proposed the *Draft of Rule* to regulate coordinated allowance auctions in the third phase (2013–2020).

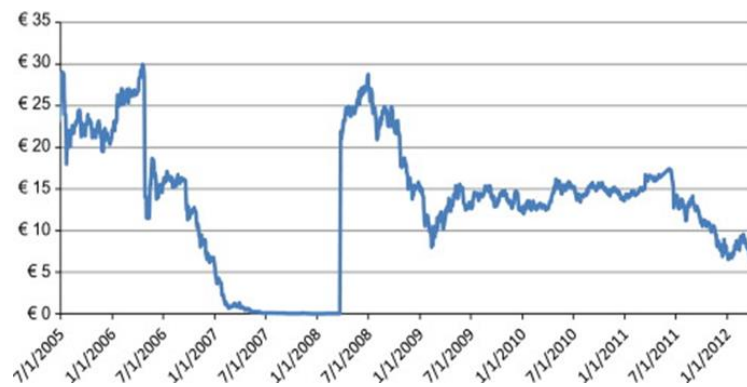
However, the largest emitters – the United Kingdom, Germany, Poland and Spain—formed a blocking minority against the draft of a single EU auction platform, insisting on controlling their own auctions and preferring a system of linked national platforms (EurActiv, 2010). In addition, nine eastern European states threatened to veto an initial proposal to auction 100 per cent of allowances in order to obtain more free allocation of allowances in the third phase (Parker, 2010). Even after the *Joint Procurement Agreement* was signed in 2011, only 24 of 27 MS had approved this agreement. Germany, the United Kingdom and Poland decided to host allowance auctions domestically. In other words, there still remained plenty of uncertainty as to how to deal with the differentiation among these national-level auction regulations and the EU central auction regulations before the start of phase three.

2.4.3 Ripple effects triggered by the Climate and Energy Package

Even though the EU-ETS was revised by the CEP in 2008 between the two phases, the problems and obstacles that the EU-ETS faced were generally sustained. More precisely, it seems that, on the one hand, the pace of policy-makers to fix the EU-ETS could not keep up with the need for practical implementation and the EUA market trend. Even though MS and businesses urgently and consistently called for greater clarity and certainty over climate policy and as well as the EU-ETS, more studies maintained a skeptical attitude toward the revised EU-ETS' efficiency and intentions (Clo, 2010; Skjarseth and Wettstad, 2010; Rauva, 2010; Wettstad, 2014). To what extent EU institutions should get involved in controlling the carbon price, or could without further distorting the carbon market, remains an open and debatable question (Blyth and Bunn, 2011). Still, a number of revisions to the EU-ETS will be applied at the start of phase three, which should be able to provide more certain and transparent messages to all actors involved in the EU-ETS and to boost the carbon price in the third phase.

Nevertheless, as can be seen in Graph 5 (next page) from the European Energy Exchange (EEX), the dropping carbon price did not reflect the expectation accompanying the policy revision in 2008, and the EUA price kept dropping from around €30 in 2008 to €7 in January 2012. Although the economic recession that happened in 2009 can partially explain why the carbon price declined sharply between 2008 and 2009, the decreasing trend that started in 2011 echoed the concerns and doubts about the intention and efficiency of the EU-ETS revision. Even though it is predictable

and acceptable that a new policy instrument like EU-ETS needs to be adapted, re-assessed and revised during its implementation, the sophisticated nature of the EU and its competence sharing among actors from different levels makes rectifying problems more difficult.



Graph 5. Carbon price variation from 2005-2012 (EEX). Source: EEX

To further examine how and why the centralised EU-ETS changed from a problem-solver to a problem-maker, the assessment is divided into two parts, internal and external (see Table 4). It seems that the only common agreement that the stakeholders in the EU-ETS have is the urgent need to revise the EU-ETS by a centralised approach. Apart from this, the different concerns of different actors at different levels all play a part in explaining why the CEP eventually became simply a political intervention with limited technical help to increase efficiency in the EU-ETS.

Table 4 The incentives and reasons for centralising the EU-ETS

	Internal disagreement within EU	External influences from the globe
Actors	‘ <i>Triologue</i> ’: European Council; European Commission and European Parliament; Member States [East-West conflict]. Industry and business.	Copenhagen climate change conference (COP15) in 2009. Post-Kyoto target negotiation.
Pressures	Different situations and needs for development; Calls for fixing EU-ETS; Issue linked to energy.	Leadership in the global climate regime Compete against the US.
Results	‘20-20-20’ target set in 2007 The CEP in 2008. Revised EU-ETS.	Copenhagen Record.

At the EU level, in 2007, the Commission, the Environmental Council and the Council committed to the ‘20-20-20’ rule and a 30 per cent reduction by 2020 if other developed countries followed the EU’s pace in ambitious reduction targets for the post-Kyoto stage (Article 28).¹⁹ This can be seen as a powerful message that the EU was reasserting its direction and determination toward a low carbon economy, both internally and globally. Vogler (2008:369) considered this *‘provided what had been lacking since the initiation of discussions on the future of the climate regime: a clear statement of intent that would allow the resumption of EU leadership.’* Later in the same year, the Parliament published an even more stringent target (European Parliament, 2007) and the Council adopted key components of the new CEP (European Council, 2007). This shows that before the CEP entered into the negotiation process, the Commission, the Parliament and the Council had already started to make sure they all stayed on the same page. Skjærseth et al. (2013) saw this as a successful and tighter cooperation among these three EU institutions, which is an improvement on the initial

¹⁹ 20-20-20 contain: (1) Reduce GHG emissions by 20% relative to the emission levels in 1990; (2) Enhance the share of renewable energy by 20% in final energy consumption;(3) Improve energy efficiency by 20% relative to the predictions for 2020.

lack of clear competence distribution and power separation. Then Wettestad (2014) further argued that the CEP in 2008 showed the crucial trend of ‘Trialogue’ talk and compromise within the EU’s climate policy-making process.

At the state level, as Skjærseth and Wettestad (2010) argued, the ‘East-West split’ became sharper during the CEP negotiation. The CEECs showed their needs to put ‘economic solidarity’ into the climate target and negotiation of revising EU-ETS design (Skjærseth and Wettestad, 2008; Skjærseth and Wettestad, 2010; Skjærseth et al., 2013; Braum, 2014). In other words, their major concerns were: ‘whether the more stringent climate target and the 100 per cent EUA auction will hamper their growing economy in transition, and how the revenues from EUA auction will be distributed among all MS.’ But even within the CEECs, split opinions remained: the Czech Republic intended to support the CEP but the rest opposed it (Braun, 2014). On the other side, although the Western Europe countries agreed and promoted the more stringent climate targets, Germany retained its ‘staunch defender’ position on its energy intensive industries and argued that their allowances should remain on free allocation to avoid carbon leakage (Skjærseth and Wettestad, 2010). The industry lobbies also claimed that the unilateral stricter climate policy and more stringent climate targets would threaten their market position against their competitors in the global market (Clo, 2010). Poland also hardened its position in the defence of coal-fired energy production in its economy. After the economic recession happened in 2009, the general concern of losing economic competitiveness indeed slowed down the ambitious target-setting and more stringent structural reform of the EU-ETS (Wettestad, 2014).

Externally, in addition to the economic competitiveness concerns, the reason why the CEP was considered to have more political concerns than the technical and practical use of policy fixing is the attempt to use the EU-ETS and the new targets as its negotiating tools in the 15th COP in 2009. This follows the EU's inherent attempt to pursue and strengthen its leadership in constructing a global climate regime and carbon market, where the revised and more efficient EU-ETS and the new targets are expected to be the crucial converged tools to supplement the EU’s directional, instrumental and intellectual leadership, when facing leadership competition from the US led by President Barack Obama, and from developing countries (such as China).

To summarise the above, the result of the revised EU-ETS in the CEP closely mirrored the disagreements and contradictory preferences among the stakeholders.

Also, the clearer direction leading to the Centralisation stage seems not to have been sufficient to meet the stakeholders' expectations. The approach of packaging energy and climate policies to decrease the difficulty in negotiation and maximising the joint gains did not increase the consensus and the effectiveness of the CEP. On the contrary, the issue-linking approach triggered more ripple effects reflecting more conflicts not only in the actors' cross-level negotiations but also on the overlapped policy mixes, such as the energy policies.

Though, following the Lisbon Treaty (which later became the TFEU), energy policy making has become an area of joint EU-MS competence, Article 194(2) also notes that MS still have the right to decide their energy exploitation and the choice of general energy mix. Under this circumstance, the energy policy domain has become a conflict arena where the Commission attempts to harmonise the EU energy policy, whilst MS prefer to retain control (Froggatt, 2015). After the CEP was adopted, the clear direction of putting energy efficiency and renewable energy development into the EU's low-carbon economy roadmap with the EU-ETS at the centre of climate governance intensifies the connection between the EU-ETS and the energy policies. On the other hand, taking the scope of EU-ETS regulation and its market-based features into account, the variation in electricity production, either because of using renewable energy or of improving energy efficiency, may directly affect the installation owners' demand for EUAs, which may indirectly affect the EUA price. Therefore, perhaps because the CEP has been a good attempt to reform the EU-ETS by vertical centralisation and by providing supplementary help from energy policies; in fact, it has conversely created a more complex problem. The added uncertainty of promoting renewable energy development and improving energy efficiency by CCS made the EU-ETS implementation and reform even more difficult. Worse is that after the linkage between climate and energy policies made in the CEP, the success of EU-ETS now requires more progress and cooperation with EU's common energy policy.

2.5 The EU-ETS in the Reconciliation and Integration Stage: 2013 to present

2.5.1 Progress: the 2020 Climate and Energy Package (CEP)

Although the CEP was approved by the Council in 2007 and enacted in legislation in 2009, the majority of the revisions to the EU-ETS didn't apply in practice until 2013, when the EU-ETS entered its third phase. As mentioned in the former section, the CEP had triggered a series of ripple effects since it was brought into force in 2009, which were felt not merely in the EU-ETS but affected the broader scope of climate and energy governance of the EU. Since this study focuses on the EU-ETS implementation and its revision, the progress tracking will concentrate exclusively on the parts that are related to the EU-ETS.

A. The conflicting scope of regulation between the EU-ETS and the ICAO

Since 'Stop the Clock' was adopted by the Commission in 2012 with the purpose of temporally exempting international flights arriving and departing from the EU from the EU-ETS regulation, the EU waited for ICAO to design market-based mechanisms (MBMs) that would include all aeroplanes at global level (Carbon Pulse, 2016). The European Commissioner for Climate Action, Connie Hedegaard, stated that the EU would reinforce the policy (i.e. include aviation in EU-ETS) only if there was no progress globally or by the International Civil Aviation Organisation (ICAO) by 2013. However, disappointingly, there was only an agreement reached in the 38th General Assembly in 2013 on a roadmap for constructing global MBMs to limit GHG emissions in global aviation sectors by 2016, which will be implemented by 2020. Under this circumstance, in 2014, the Council and the Parliament approved another ET Directive revision, which was to only include the emissions of flights within the EEA in the EU-ETS from 2013 to 2016.²⁰ Therefore, starting from 2013, at least 50% of the allowances were distributed to intra-EU aviation sectors by auction (Froggatt, 2015).

B. The expanding scope of the EU-ETS

From the start of EU-ETS Phase III in 2013, aluminium, CCS, petrochemicals and other chemicals have also been included. And it is foreseeable that the scale and the coverage of the EU-ETS will continue to gradually expand. Given that the EU-ETS is

²⁰ See the Regulation (EU) No. 421/2014 from EUR-Lex. Available from: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2014.129.01.0001.01.ENG.

a market-based policy instrument, the more actors involved in the market, the more meaningful and steadier the carbon price signal can remain, and the stronger the economic and environmental effectiveness of the EU-ETS.

C. The GHG emissions reduction target

By 2014, total GHG emissions of the EU had dropped by 23% from the 1990 level (EEA, 2015). This means the EU had effectively met its GHG reduction target 5 years ahead of the schedule set in the CEP. Some scholars have argued that it benefited from the higher mean annual temperature in 2014 and the economic crisis in 2009, as both of them led to lower energy consumption. Apart from these two reasons, Froggatt (2015:17) indicated the important help from ongoing restructuring in the industrial sector, improving energy efficiency and the greater renewable energy share in energy production. Following Sandbag's model projection (2015), the EU is on track for a 30% cut from the 1990 level by 2020. This good news however triggered the criticism that the 2020 target seemed not as ambitious as had been claimed. Considering the speed of cutting GHG emissions, the voices for further tightening the EU's climate target and raising the ambition then became louder (ibid).

D. The disincentive of overflowing EUAs

As mentioned before and shown in Graph 5 on page 67, the EUA price on the spot market dropped to €0.06 per tonne by the end of 2007, which was due to the oversupply of EUAs with no bankable and no cross-phase design for the trial phase in the initial ET Directive. Thus, the EU-ETS revision in the CEP was strongly expected to fix this problem. As Graph 6 shows on next page, the EUA price reached €30 after the CEP was confirmed and awaited being entered into legislation the year after. However, the financial and economic crisis between 2008 and 2009 caused a big drop in the EUA price to lower than €10. Since then, the expected 'positive signal' from CEP still has not been able to compete with the influence from economic stagnation, which kept the EUA price fluctuating around €15 between 2010 and 2011.



Graph 6 EUA price variations from 2005 to 2015. Source: Borghesi and Montini (2016:4).

Apart from the economic downturn, Erbach (2014) and Borghesi and Montini, (2016) both mentioned the influence of the series of energy efficiency and renewable energy Directives which also played a part in keeping the EUA price falling between 2011 and 2012. Erbach (2014) further noted the increasing trend of using cheaper international credits under the Linking Directive instead of allowances in the second phase, which not only had a negative effect on the EUA price but exacerbated the issue of EUA surplus as well. All in all, although the EU's GHG emissions reduction was on track to meet its target, the EU carbon market remained a disincentive.

2.5.2 'Backloading': the attempt to fix the EUA price

In order to address the excess of EUA in the market, at the end of 2012, the Commission drafted a 'Backloading' proposal in an attempt to rectify the overflowing EUAs situation by postponing a total of 900 million EUAs from 2013 to 2015 to later in Phase III. However, the uncertainty during the 'Backloading' negotiation in the year 2013 left the EUA price very low, which was mainly due to the dispute between two committees in the Parliament (ITRE and ENVI). As shown in Graph 6 on the previous page, the EUA price remained at only around €5. In this situation, the low carbon price with the overflowing allowances in the market put severe pressure on policy-makers. Therefore, after rejecting the Backloading proposal in April 2013, the Parliament eventually approved it in July 2013 with the condition that it be amended.

However, several stakeholders like the Alliance of Energy Intensive Industries remained concerned about short-term carbon price fixing by political intervention, as it might further distort the market and increase costs for industry and private consumers.

Nevertheless, the British government allied with 12 MS (including France, Germany and Italy) and made a joint statement in support of Backloading and further structural reforms. Also, voices from academia (Marcu, 2012) agreed that the policy of Backloading was a necessary but not sufficient step for EU-ETS revision. Apart from these, the NGOs (e.g. Greenpeace) also showed cautious support for Backloading and argued for further structural reforms of the EU-ETS (Ottery, 2013). Finally, the Backloading plan was approved at the beginning of 2014. From 2014, the auction volume was reduced by 400 million EUAs and was to be reduced by 300 million and 200 million respectively in 2015 and 2016.

2.5.3 The 2030 Climate and Energy Framework

With the purpose of providing more certainty in the EU carbon market and strengthening the credibility of the EU's flagship policy in climate governance (i.e. the EU-ETS), the Commission proposed the policy framework for climate and energy for the 2020-2030 period at the start of 2014 (aka 2030 Climate and Energy Framework, hereafter: the 2030 Framework). In addition to these two purposes, Froggatt (2015) indicated that preparation for the UNFCCC summit in Paris at the end of 2015 was also one of the purposes for which the EU outlined the next ambitious climate and energy package. During the process from drafting (the Green Paper in 2013) to the revised version in 2014, the first and also the most crucial conflict belonged to the EU-wide climate target negotiations, especially after the painful disappointment of the 2020 CEP in 2008. The second issue would be the matter of how to reform the EU-ETS. The third one was the start of constructing the Energy Union with the aim of connecting climate change, energy security and competitiveness by building a new government system (NGS) with a more coherent approach.

Compared to the 2020 CEP, the conclusion of the 2030 Framework formed a clearer reconciliation trend not only between the linkage issues, but also among the major actors. First of all, as shown in Table 5 on the next page, unlike the 2020 targets, which were set with stronger binding power over MS, the targets set for 2030 Framework left more flexibility at state level (Jacobsen&Crisp, 2014). While the targets in the 2020 CEP were translated into national binding targets through the corresponding Directives from EU, the 2030 targets are binding at the EU level only. As mentioned before, most of MS support the 40% GHG reduction target by 2030. Germany, the UK, France and Italy jointly supported and urgently asked the Commission to approve it

(Froggatt, 2015). Besides, several industrial associations (Eurogas, 2013 and 2014; Eurelectric, 2014) also welcomed the EU approving a target of at least 40% reduction. However, Greenpeace (2013) argued that what the EU needed was binding targets of at least 55% for domestic emissions reduction.

Table 5 The EU climate targets comparison between 2020 and 2030 Framework

Targets	2020 Framework	2030 Framework
Binding level	National level	EU-level
GHG Emissions Reduction	20% (1990 level) EU-ETS plus Efforts sharing Decision	40% (1990 level) EU-ETS plus Efforts sharing Decision
Increase of Renewable Energy Use	20% of total energy consumption Renewable Energy Directive	27% of total energy consumption
Increase of Energy Efficiency	20% (baseline scenario) Energy Efficiency Directive	27% (baseline scenario)

The controversial and sensitive negotiations between the EU and MS concern the targets for renewable energy and energy efficiency. From MS' perspective, this follows Article 194(2) of the Treaty on the Functioning of the European Union (TFEU) that EU shall leave 'greater flexibility for its MS for controlling the energy mix. But the Commission (2014:6) made it clear that:

'These new commitments for 2030 will be reviewed as part of the governance process described in section 3 and, if necessary, they would be complemented by further EU action and instruments to ensure delivery of the EU target. '

From the industry point of view, keeping the energy targets at the EU level with a technology-neutral approach can help them to make the most cost-efficient choices without distorting the common market (Eurogas, 2013; 2014). But this 'flexibility' also brought another pressure on the governance process and structures between EU and MS. So the Commission further argued (2014:7) *[the] increased flexibility for Member States must be combined with an increased emphasis on the need to complete the internal market in energy.* Therefore, it seems quite clear that by giving more flexibility

to MS, the Commission successfully pushed the Energy Union agenda forward, which reinforced the interconnectivity between energy governance and climate governance in the EU.

Secondly, the EU-ETS has always been emphasised as a central pillar to support the EU's climate governance. Particularly after experiencing the first comprehensive revision in 2008 by the centralised approach but still facing the low carbon price and over-supply of EUAs in the EU's carbon market, how to revise the EU-ETS is in the limelight, both within and outside the EU. As a major actor in the global carbon market, how the EU will 'correct' its internal carbon market can provide not only an example to the globe; it can also reinforce the EU's directional leadership²¹ in the carbon market.

One of two crucial steps would be the cap setting, which is directly linked to the EU's long term GHG reduction target. So, following several consultations with stakeholders, the Commission intends to amend the annual linear reduction factor (LRF) from 1.74% to 2.2% after 2020. The other crucial step would be the correction of oversupplied EUAs in the market. Therefore, after taking the first step by approving 'Backloading', the Commission also proposed to amend the EU-ETS by creating the Market Stability Reserve (MSR), which is a mechanism that is built on the 'volume-based' and 'rules-based' approaches and the principle of automaticity (IETA, 2014; Commission, 2015). These are expected to increase stability, transparency and predictability in the EU's carbon market by minimising political intervention. The rules that compose an 'EUA quantity corridor' are (the Commission, 2015: 95):

- When the total number of allowances in the market exceeds 833 million, the MSR then withholds 12% of the EUAs from auctions;
- When the total number of EUAs in the market drops below 400 million, then MSR injects 100 million EUAs into the market by putting them to auction.
- When the total number of EUAs in the market does not exceed 400 million, but the EUA price is three times higher than the average price of the preceding two

²¹ Grubb and Gupta (2000:23) defined the directional leadership as '[the leadership of] showing the leadership by domestic implementation and attempts to shape how other negotiators perceive the issues under consideration and think about solutions.'

years and remains so for 6 consecutive months, the MSR shall inject up to 100 million EUAs by increasing the volume of EUAs auctioned.²²

The revisions seem much more robust and are getting wide support from the stakeholders. However, several concerns and details remain controversial. When some MS (Germany, the UK, Sweden etc.) urgently requested that the MSR should come into place in 2017, instead of 2021, other MS showed strong opposition and saw it as another political intervention in the EU-ETS market (e.g. Poland). The UK and Germany argued that the 900 million EUAs removed by the ‘Backloading’ should not go back onto the market after Phase III but simply enter the MSR directly. The German government also believed that cancelling 1.6 billion surplus EUAs left from the phase II can further correct the political mistake from the previous EU-ETS revision (DEHSt, 2014), while Poland remained against the EUA cancellation (PKEE, 2015).

Conclusion

To sum up the literature review above, we tracked emissions trading from being an economic instrument initially to becoming a political apparatus with multiple objectives in the EU’s case. Then we focused further on the major and crucial actor, the EU, to further unpack how it pursued the trajectory of becoming a pioneer and an advocate of emissions trading. After experiencing political pressure both intra- and extra-EU, and legal clarification, the EU and its 28 MS finally constructed the ‘EU-style’ emissions trading scheme in 2003, yet it has seemed problematic since then.

It seems that after reforming the EU-ETS by the centralised approach in 2008 and adding the MSR mechanism with quantity-base to correct the oversupply of EUAs in 2014, the technical structures (both technical infrastructure and policy structure) of the EU-ETS have finally been reshaped to better fit the needs of the EU (as a whole). However, in line with the Commission’s concern that was noted in the Communication in 2014, the success or failure of the EU’s climate governance will be even more reliant on the governance structures. In other words, the revisions for both technical infrastructure and policy structure of the EU-ETS seem to have reached their limit. Are the current EU’s governance structures capable of supporting the multiple integrations triggered by EU-ETS implementation? This is the crucial question for the EU’s climate governance and EU integration. Because of the EU-ETS’ market-based feature and the

²² This rule can correspond to the measures listed in Article 29(a) of the ET Directive.

policy-driven tradition, the chain reaction among the economy, energy and climate governances in the EU has become clear. Especially for an organisation with special ‘actorness’ like the EU, after constructing a single common market, a single common carbon market and developing an internal energy market, how to build the linkages among these markets by a series of policy reforms and integration really becomes a challenge to the EU’s governance structures

Against this background, this study, therefore, goes on to focus on how MS may act and react to these reforms. In other words, before the EU further reforms the current ‘governance structure’ that has been blocked by techniques revision like the CEP, it is crucial to unpack MS’ national preferences formulated by the domestic ‘contextual factors’ that are affected and awoken by EU-ETS implementation in different stages. Only by doing so can we gain further understanding of which way the accumulated stresses on governance structures could be removed or resolved. Only when the governance structures can be adjusted to fit the needs from reinforcing the effectiveness and efficiency of EU-ETS implementation from the main stakeholders in the reconciliation approach, can the EU be of benefit to moving on the way to becoming a low-carbon economy in the long term. Therefore, the next chapter will demonstrate by what research design we can unpack the so-called ‘national preferences’ that have long influenced and stood in the way of revising the EU-ETS and increased the pressure on the ‘governance structure’ of the EU.

Chapter 3 Research Design

Introduction

This chapter outlines the research design, which includes the analytical framework, methodologies and approaches. Before explaining the analytical framework, the causality among three major variables (EU integration, EU-ETS implementation and national preferences) will be cautiously re-evaluated to distinguish the scope that is employed here from other EU-ETS policy analyses. Then the analytical framework is divided into two parts to further explain. The first part provides the timeframe and background at the macro-level, which refers to the EU-ETS development under the EU's integration trend. This timeframe and background show the interaction between the EU and its MS during the EU-ETS evolution. The second part is the analytical framework at the micro-level, which is designed for the empirical case studies to investigate how the targeted MS react to and further influence the EU-ETS revisions in the context of EU integration. This section of the framework attempts to:

- i) Identify the 'misfit' between the empirical need for policy revisions from the targeted MS and the supply from existing policy revision;
- ii) Show how these targeted MS are not just affected by the EU-ETS implementation but also reflect their preferences back to EU-ETS revision and EU integration.

Regarding the theoretical approach, the theory of Multilevel Governance (MLG) serves as the foundation of the research design at the micro-level to understand how targeted MS' preferences are formed during the EU-ETS implementation. There is a common misunderstanding that the importance of states has decreased in MLG's observation on EU integration, which is disagreed with by Bache and Flinders (2004:17-22) and Hooghe and Marks (2010: 18). Hooghe and Marks (2010) affirm that the role of individual governments continues to be the main unit of the MLG analysis, while the state's jurisdiction and the dispersion of authority are allocated in a general-purpose way to a limited number of levels, like a 'nested' hierarchical structure. This is for the purpose of keeping the governance structure stable. When any kind of jurisdiction reform becomes costly and unusual, it makes the barriers and costs of changing status quo higher and even more difficult to overcome, like a zero-sum issue. However, based on the experience of implementing EU-ETS so far (in chapter 2),

neither the climate governance structure nor the structure of EU-ETS design can be claimed as stable. Let alone that the negotiation between jurisdiction levels that accompanies the policy reform seems not to be a zero-sum issue but has become an issue-linking package since 2008.

Another type of MLG supports the idea that the importance of states has largely decreased with EU integration, especially since the Single European Act clearly put the environmental sphere under the EU institutions' competence. However, from the case of EU-ETS, it seems as though some MS retain their influences (or even have stronger one) when EU-ETS is negotiated and revised at the EU level, especially since the reform of EU-ETS and the result of the CEP in 2008 raised controversial ideas about the role and competence of MS in the EU's further integration. From the LI perspective, after the trial phase of EU-ETS implementation, it is because of the MS' changing positions (preferences) and decisions that pursues the centralisation in the EU-ETS revision. However, Skjærseth and Wettestad (2009, 2010) argued that it was not merely the MS' changing position but also the preferences of the EU institutions that affected the CEP and EU-ETS revision.

In spite of that, after applying MLG and putting their emphasis on EU institutions, Skjærseth and Wettestad did not clearly explain either what made MS change their positions or how MS' changing preferences interacted with EU institutions' preferences. Instead, it seems that Skjærseth and Wettestad (2010) and Wettestad himself (2009:2) applied LI and MLG as 'complementary heuristic lenses' to justify what exactly happened at different levels only. But, this research is of the belief that, before summing up whether it is MS (as the LI claims) or the EU institutions (as the MLG argues) that take the lead in shaping EU-ETS, determining what are the contextual factors composing the national preferences and examining how these priorities may determine states' reactions to EU-ETS revisions may be more practical when it comes to fixing the misfits between EU-ETS revisions and the EU's 'governance structure'.

Therefore, instead of simply picking a side between LI and MLG or applying both to observe a part of each level, this study sets out to unpack what are the contextual factors (or 'preferences' from MS' point of view) and how they influence MS' positions on the EU-ETS in EU's climate policy integration, by observing the selected targeted MS. More explicitly, the analysis is concentrated on the state level, since identifying

how the inherent contextual factors in the domestic arena affect the state's position and attitude can also be related to states' actions at the EU level later. After the rationale of adopting the case study approach and the criteria for choosing the targeted MS for case study are explained, the third section of this chapter will record other supporting approaches and the sources of data that have been used. Then the expected contributions and the limitations of this research design will be discussed in the last part.

3.1 Analytical Framework

As addressed in Chapter 1, among the literature regarding where the idea of emissions trading came from and how the EU reshaped it into the EU-ETS, plenty of research sees EU-ETS as a mediating variable that is affected by European integration (as an independent variable). The EU-ETS was first revised from the traditional emissions trading system and then defined as a central pillar of EU's climate governance by the Commission in 2003. This strengthened the EU-ETS as a 'de facto' mediating variable (applied by the EU institutions) when pursuing EU integration. Scholars continue to position national preferences as a dependent variable that was affected or even changed by the first phase of EU-ETS implementation under the trend of pursuing harmonisation while tackling GHG emissions reduction in the EU. Scholars such as Wettestad, Eikeland and Nilsson (2012) argued that EU-ETS implementation pushed MS to reach the consensus that vertical integration might be beneficial to national interests/preferences. By and large, the correlation among these variables can be presented as in the following graph:



Graph 7. The common correlation among major variables in the literature

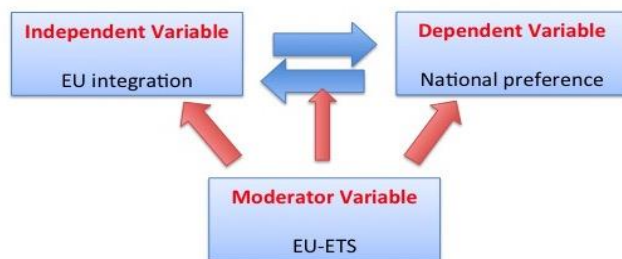
Before continuing to construct the analytical framework, a clearer correlation among the three major variables needs to be identified. The concepts of the mediating variable and the moderator variable have been used extensively and commonly in the areas of social and behavioral research. One of the most representative works that clarified the difference between these two variables is by Baron and Kenny (1987:1176), and focuses on their application in social psychological research. Baron and Kenny

indicated that *‘Mediators explain how external physical events take on internal psychological significance. Whereas moderator variables specify when certain effects will hold, mediators speak to how or why such effects occur.’*

To put this into the context of EU-ETS investigation and analysis, the author agrees with the idea that after the EU-ETS was first affected by European integration, the MS were faced with the need to re-prioritise or reshape their national preferences to reflect the cumulative influences they received from EU-ETS implementation and EU integration. In particular, the EU-ETS implementation in the initial stage and perhaps also part of the Centralisation stage can be seen as a process that induced MS to re-shape their national preferences.

However, within the EU-ETS implementation and revision processes, according to the changes and centralising trend since 2008, the inherent economic influence and the expanding scale of EU-ETS regulation have created the need to strengthen the linkage and the coordination between the EU-ETS, economy and energy. This linkage has resulted in an urgent and wider requirement for policy revision or even integration. This, on the one hand, can be seen as the pressure brought about by EU-ETS implementation that also affected MS’ preferences on EU integration. On the other hand, MS have to not only keep adjusting themselves to the existing integration trend of EU policies but also react to the policy integration (and adjustment) pressure resulting from EU-ETS implementation in the domestic arena.

According to Baron and Kenny’s (1987:1714) definition of moderator variable, it is *‘a qualitative or quantitative variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable.’* In this case, on the one hand, EU-ETS implementation has exerted pressure to further integrate policies in the EU; on the other hand, it has also influenced the formulation or re-prioritisation of MS’ preferences as they respond to EU directives or regulations. So, to sum up, considering these two influences on both independent and dependent variables, unlike the common understanding to take it as a mediating variable, this thesis argues that EU-ETS implementation should be seen as moderator variable between European integration (independent variable) and national preferences (dependent variable) as shown in the following graph.



Graph 8. The correlation among major variables argued in this study

3.1.1 The Analytical design at the macro-level

After clarifying the correlation among the three major variables in this study, this section explains in three stages the time-line and background of the analytical framework at the macro-level. Although these three stages demonstrate the significant turning points in the EU-ETS evolution, they also reflect the different influences that EU-ETS has received from European integration (set as an independent variable in this research). The three stages can be included in the concept of European integration but accompanied by different core concepts. As commented by Jordan and Liefferink (2004:24), *European integration can hardly be regarded as a 'sudden' or 'one-off' political event. Instead, it is a gradual process and its domestic impact probably comes about even more gradually.* This helps to explain why European integration and its effects are difficult to define clearly and measure exactly. The most common way to understand European integration is to generalise it by applying study terms, such as 'impact of Europe', 'impact of *Europeanisation*' and 'impact of the European Union' (Mair, 2000; Bache and Jordan, 2009). Following this line of thought, we find that the first essential concept and synonym of European integration is '*Europeanisation*'.

However, an explicit and distinct definition of Europeanisation has never been agreed or applied universally. Jordan and Liefferink (2004:1) found that it might be because '*the precise meaning and analysis of Europeanisation have run too far ahead of detailed empirical research*'. In other words, the optimal way to refine the explicit understanding and context of Europeanisation is by examining empirical practice. Some researchers have attempted to classify the full range of definitions regarding Europeanisation (Jordan and Liefferink, 2004; Bache and Jordan, 2009). The more common and comprehensive ones may be grouped as in the work of Jordan and Liefferink (2004:6):

- (1) The top-down impact of the EU on its MS (Heritier et al., 2001; and Jordan and Liefferink themselves);
- (2) The accumulation of policy competence at an EU level (Cowles et al. 2001:2);
- (3) The growing importance of the EU as a reference point for national and sub-national actors (Hanf and Soetendorp, 1998:1);
- (4) The horizontal transfer of concepts and policies in the EU between MS (Bomberg and Peterson, 2000; Ladrech, 1994:69);
- (5) The two-way interaction between states and the EU (Goetz, 2002:4).

In this study, based on the earlier clarification among the three main variables, the fifth definition was adopted to understand the European integration in this thesis, i.e. *Europeanisation is a two-way interaction between states and the EU*. To be more specific on this two-way interaction, Radaelli (2004:10) gave this definition: ‘Europeanisation is change both in the sense of responses to EU pressures and in the sense of other usage of Europe which does not presuppose pressure’. As illustrated in Chapter 2, the initiation, negotiation and practice of the first phase of EU-ETS were not limited to a top-down impact of the EU on its MS: whilst the concepts and policies were horizontally transferred to state level, activities at the different level of ‘other usage of Europe’ can also be found. Therefore, the process of ‘Europeanising’ emissions trading is certainly a two-way interaction between the EU and its MS.

When looking further into the ‘two-way interaction’ within Europeanisation, Radaelli (2003) classified five types of interaction outcomes, which are retrenchment, inertia, absorption, accommodation and transformation. Radaelli and Bulmer (2004) attempted to group the interactions into three types. The first type is positive policies integration, meaning that the national and EU policies contain a high degree of fit. The argument of ‘goodness of fit’ that is commonly seen in many empirical studies to assess the efficiency and effectiveness of the EU’s policies belongs to this type. The second type is negative policies integration, in which constant competition is a major characteristic. The final type emphasises coordination, which highlights the learning within the process. Knill and Lenchow (2005) further simplified these by classifying them as: governance by compliance; governance by competition and governance by communication and information exchange in transnational networks.

In the case of EU-ETS, the two-way interaction between EU institutions and MS has involved not merely compliance and competition but also contained close

communication and information exchange. Thus, applying ‘two-way interaction’ to understand the Europeanisation of EU-ETS is indeed in line with the practical situation of EU-ETS; however, it also blurs the distinction between independent variable and dependent variable. Since the focus of this study is to improve understanding of the blocked EU-ETS revision against the background of EU integration, identifying MS’ contextual factors within the ‘two-way interaction’ should be sufficient. Therefore, by applying the fifth definition, this study can assess how targeted MS and the EU have interacted within the EU-ETS development and how the interaction later formed a reconciliation trend to influence European integration after the centralisation.

■ **The Europeanisation stage: 2000-2007**

Once the definition of Europeanisation has been settled as explained above, it can be argued that the ‘Europeanisation stage’ in the EU-ETS ran from the idea of building up a community-wide ETS in the ECCP in 2000 to the CEP negotiation in 2007. The ECCP in 2000 constructed and presented a cross-level platform to strengthen the consensus toward the emissions trading approach, which contributed to the general acceptance and steady application of the ET Directive. This resulted in the EU institutions moving a step forward by explicitly demonstrating their preferences and setting the general direction for the EU-ETS in the Green Paper, which was ‘centralised cap, allocation by auction, and aiming for emissions reduction in energy sector and heavy industry’. However, the influence of European integration and the existing preference conflicts remained across MS, which can be inferred from the clear inconsistencies between the Green Papers drafted by the Commission in 2000 and the ET Directive adopted in 2003. Additionally, the Linkage Directive adopted in 2004 secured the potential link between the EU’s carbon market and the global credits issued by the Kyoto flexible mechanisms. This can be seen as the result of MS’ securing their potential needs to use project-based credits to supplement their ‘domestic reduction measure’ in the EU-ETS in the long term. Before the ‘20-20-20’ was adopted by the European Council in 2007, the process of EU-ETS system construction showed a strong influence from Europeanisation in the background.

■ **The Centralisation stage: 2008-2012**

After the first official emissions reduction data report released in 2006, convincing evidence of the over-allocation and the inadequate design of EU-ETS gave rise to the call to reform the EU-ETS. Then, as illustrated in Chapter 2, the ‘20-20-20’ adopted by

the European Council in 2007 and the CEP in 2008 not only became the essential turning points for EU-ETS revisions but also resulted in a lively discussion regarding European integration in the media (Uusi-Rauva, 2010) and in academia (Kruger et al., 2007; Wettestad, 2009; Capros et al., 2011; Wettestad et al., 2012; Spencere and Fazekas, 2012). Given that terms like 'centralised governance' (Wettestad, 2009), 'vertical integration' (Wettestad et al., 2012) and 'harmonisation of climate policy' (Spencere and Fazekas, 2012) are frequently used in these articles, the distinct and core characteristic of this new stage supported by the revisions in approach then becomes clear: '**centralisation**'. This is also the reason why this study highlights these critical turning points as the start of the second stage of EU-ETS development. This study interprets it as 'vertical integration', which is reflected in the centralised EU-ETS design and the states' competences being converged to the Commission in pursuing a level playing field.

There is further empirical support from EU-ETS development: the '20-20-20' and CEP show a clear signal of consistent preferences from the Council for the GHG reduction target to be more ambitious and stringent and for the setting of the overall target to be stepped up to EU level (top-down approach). This is contrary to the cap-setting approach of accumulating all national caps (i.e. decentralised and bottom-up) in the former stage. Furthermore, as addressed in Chapter 2, several revisions (e.g. EUA allocation approach; the expanding scale of EU-ETS; decreasing the reliance on setting NAPs) to EU-ETS policy design in the CEP also represented a significant shift that was completely opposite to the de-centralised EU-ETS in first compliance period.

From the European integration perspective, the '20-20-20' adopted by the Council and its request to the Commission to draft the related policy revision (i.e. CEP) in order to meet '20-20-20' represented a clear preference change from MS. Contrary to the skeptical or conservative attitude toward EU-ETS design, after the implementation in the first phase, the MS acknowledged that a centralised EU-ETS might actually be beneficial compared with the de-centralised one. Although detailed issues, such as to what degree the revised EU-ETS should be centralised, remained controversial among the MS (Skjaereth and Wettestad, 2010), the major principle of revising EU-ETS against the background of EU integration was set to be centralising at this stage.

In 2010, the European Commission adopted the *Draft of Rule*, which provided measures to create a central auction platform for EUAs starting in 2013. In 2012, a

single centralised EU registry operated by the Commission was built covering all countries' participation in the EU-ETS. These reaffirmed that the EU-ETS design was indeed shifting to a more centralised and harmonised common carbon market instead of remaining 31 national carbon markets in the EU (28 MS plus Norway, Iceland and Liechtenstein from the EEA that joined EU-ETS in 2012). However, the imbalance between the supply and demand of EUAs that resulted in overly low carbon prices has continued growing since the EU-ETS was amended by centralised approaches. Thus, the proposal of 'Backloading' with the attempt to decrease the excess EUAs in the short term started in 2012. This caused controversy not only between the Parliament and the Commission (Dirix, et al., 2015:710) but also among or within MS (EurActive, 2013). This shows that merely uploading the competences to the EU institutions to revise EU-ETS with a centralised approach could not efficiently resolve the problems that remained in the EU-ETS. Packing the EU-ETS revision and negotiation together with other policies (e.g. renewable energy) indeed encouraged and sped up the political negotiations among MS, but it also increased the likelihood of controversial policy objectives or distorted policies cross-level or at the domestic level. Therefore, the success of EU-ETS implementation requires other related policies to be taken into consideration by both horizontal coordination and vertical integration (Skjarerseth and Wettstad, 2010; Kautto et al., 2012; Schwaiger et al., 2012; Gawel et al., 2014). This practical need also forms the background for both EU-ETS revision and EU integration to move a step forward to pursue another level of integration, i.e reconciliation, which underlines the deeper cooperation and coordination both vertically and horizontally that cross the policies and levels within the EU.

■ **The Reconciliation and integration stage: 2013 to present**

Following the literature review and explanations addressed so far, this study has shown how the active interaction and the expanding influences between EU and its MS resulted from EU-ETS implementation. With the EU-ETS further developing, it has transferred from a mechanism that was shaped by both the EU and MS to a 'power switch' to induce changes from both MS and the EU (either individually or as a unit). And the practices and fixes of Europeanisation and centralisation seem not to fit directly the needs of the EU-ETS as a market-based scheme but one strongly influenced by politics. Conversely, the revisions eventually triggered an even higher demand for policy fixing and integration. As Skjarerseth and Wettstad (2010) and Wettstad (2014) commented, fixing the EU-ETS by a centralised package approach in 2008 has made

EU climate policy reforms more complicated because of the ‘issue linkage’ to the progress and revision of other policies. Thus, Spencer and Fazekas (2012) argued that ‘*balancing distributional choices*’ in EU’s climate governance has become even more crucial, as it is composed of multiple, overlapping policy levels and instruments because of the CEP.

On the other hand, from basic economic theory (Tingbergen, 1952), the reason why the revised EU-ETS after centralisation through the CEP remains blocked is because emissions market segmentation or overlapping regulation (by applying more than one instruments) may make climate policy application more expensive than necessary. However, several scholars, such as Mandell (2008) and Lecuyer and Quirion (2013), argue that applying a multiplicity of policy instruments to reduce GHG emissions is more socially beneficial than using a single instrument. Also, Boehringer et al. (2009) confirmed that differential emissions pricing and/or overlapping regulations can sufficiently ameliorate initial distortion as long as the indirect efficiency gains are higher than the excess costs. To apply this statement to the revised EU-ETS since 2008, the revised EU-ETS may regulate the distorted carbon market more efficiently as long as the link to other policies can be coherent and avoid distorting the different policies objectives. This implies that besides vertical integration, the revised EU-ETS may also need to strengthen horizontal coherence with other policies.

Since then, in empirical research, discussion about how to combine EU-ETS implementation with other overlapping policies, regulations or instruments and related national policies has been quickly emerging (Kautto et al., 2012; Schwaiger et al., 2012; Gawel et al., 2014), especially with regard to policies for improving energy efficiency and renewable energy since the 20-20-20 was adopted. In theoretical discourse, these practices and instrumental revisions have challenged the long struggle to pick a side between top-down and bottom-up, convergence and/or divergence in studying European integration politics or policies (especially climate governance and policy-making) and moved to a search for reconciliation.

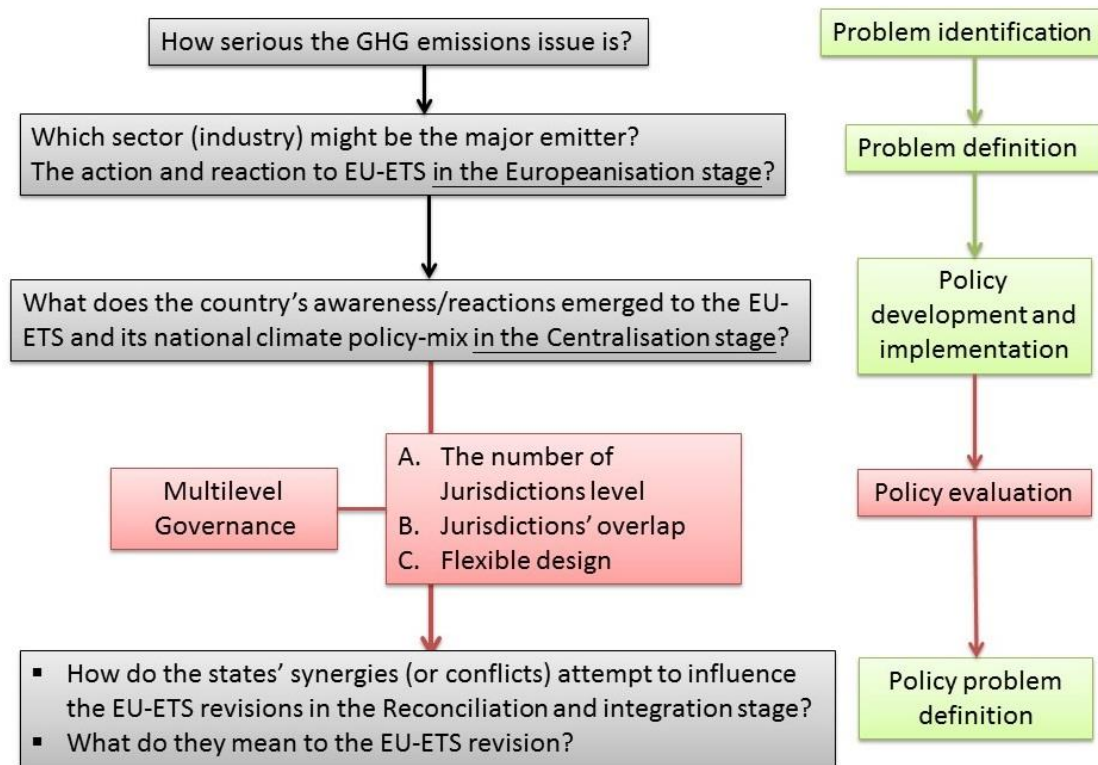
In 2013, another institutional attempt to fix the EU-ETS started to be discussed at EU level, which was the negotiation for the 2030 Framework. Apart from the existing centralised approach, the 2030 Framework responded to the domestic needs for coherence and harmonisation of the climate and energy policies by building up a New Government System (NGS). This idea of NGS may echo the trend of finding a

reconciliation of the long-standing dilemma in EU integration studies. Therefore, this study defined the year of 2013 as the start of the ‘reconciliation and integration stage’, which means the attempt to reconcile vertical integration and horizontal coherence among overlapping policies, different policy instruments and governance approaches. The development of EU’s climate governance has started showing an even clearer ‘trans-boundary’ characteristic like Lees’ analysis (2007) by gradually breaking the boundaries between markets, policies and politics. To an extent, the concept of pursuing reconciliation between EU energy policy and the EU-ETS in its climate governance even blurs the boundaries between the traditional integration concepts of ‘top-down’ and ‘bottom-up’ in European studies.

3.1.2 The Analytical structure at the micro-level

In order to answer the first two research questions and identify what synergies or conflicts are formed by MS’ national preferences when they implement the EU-ETS while having EU integration in the background (defined as macro-level), this study has applied a five-stage analysis of policy process to keep the investigation systematic and consistent in each case study (defined as micro-level). The five-stage analysis of policy process is: problem identification; problem definition; policy development and implementation; policy evaluation and policy problem definition.

As shown in Graph 9 on the next page, in ‘problem identification’, the first quantity identified is the GHG emission issue in the targeted member state based on its economic structure and energy mix. Then in the ‘problem definition’, this has been narrowed down to identify the most problematic GHG emitting industry. It is also important to address the targeted country’s first reaction to and reflection on the EU-ETS in the Europeanisation stage.



Graph 9 The micro-level analytical framework.

The third step is called ‘policy development and implementation’, which is to examine how the targeted member state implemented the EU-ETS in the Centralisation stage and what other domestic impacts emerged that may have affected their preferences toward the revised EU-ETS. Afterwards, based on both the EU-ETS implementation and domestic impacts, the study will then evaluate and conclude the contextual factors that have existed and remained to influence these targeted MS’ implementation of and reactions to the revised EU-ETS. And even with the same contextual factors, the triggered synergies or conflicts that affect these targeted MS on implementing EU-ETS might be different, which might result in different precedence among contextual factors when compromising or negotiating in the EU. In the final section of each case study is a summary of how the targeted MS reacted and utilised their domestic synergies or conflicts to ‘bottom-up’ their preferences to the EU and directly influence the EU-ETS revision in the reconciliation and integration stage.

3.2 Methodological Approach

As Benson and Jordan (2010:122) stated, *‘the EU has evolved from an economically based international organisation into a complex, multilevel system of governance that strongly affects the environmental policies of its member states’*. Policy-making in the EU strongly reflects the influences of complex factors at different levels. Therefore, Shimmerlfenning and Rittberger (2006:92) argued *‘a combination of the factors and conditions postulated by different theories of integration may be necessary to account for phenomena of sectoral, vertical, and horizontal integration.’* This argument has gained unanimous support from scholars who focus on EU environmental policy-making in recent years, especially since the EU-ETS started to emerge.

With the focus on the EU-ETS, many scholars like Skjærseth and Wettestad (2008a, 2008b, 2009, 2010), Wettestad et al., (2012), Boasson and Wettestad (2010) and Wettestad himself (2008; 2009a; 2009b, 2014) have largely relied on this basis to further investigate the EU-ETS evolution and practice. Thus, it is not surprising that they have all applied at least two competing heuristic lenses when they attempted to investigate EU’s governance of its emissions trading system’s initiation, implementation and revision.

In particular, there is a pattern that can be recapitulated from the work of Skjærseth and Wettestad (2008a, 2008b, 2009, 2010) and the research by Wettestad himself (2008; 2009a; 2009b, 2014) to apply LI at the state level, MLG for EU institutions, and the global climate regimes approach for external influences. Firstly, they argued that LI was sufficient to understand how the EU-ETS proceeded from an initial decentralised design (aka Europeanisation in this thesis) to the centralised revision in the CEP. These processes mainly reflected the outcome of inter-states bargaining, in which the EU is seen as an international regime that allowed the main actors, sovereign states, to negotiate and bring national preferences to bear on EU decision making, especially in the Council (Skjærseth and Wettestad, 2008a, 2008b, 2009, 2010; Wettestad, 2008, 2009a, 2009b, 2014).

Secondly, in order to find out who or what really dominated the vital turning point of EU-ETS revisions in the CEP, these scholars added the notion of MLG to explain the increasing power of supranational institutions (e.g. the Commission and the Parliament) and the influences from non-state actors. Moreover, Skjærseth and

Wettestad (2010) specifically noted that the supranational ‘institutions’ they defined are not only ‘the arena to negotiate when does who get what from where’ but also the actors (as supranational organisations) who can provide independent input or change positions in the process. Thus, in the case of EU-ETS revision, it is affected by the EU institutions, which changed their positions whilst being the arena for all interest groups to bargain in the meanwhile (Skjærseth and Wettestad, 2010; Wettestad, 2014). Thirdly, these researchers drew on perspectives from the global climate regime, such as the impact from the UNFCCC in 1992 and the KP in 1998 on initiating the EU-ETS and later the correlation between the Copenhagen climate change conference (COP15) and the CEP. It is clear that global climate targets and negotiations may have played the crucial roles in the EU’s pace of change in moving to centralisation of the EU-ETS (Wettestad, 2009a, 2009b, 2014; Skjærseth and Wettestad, 2010). They argued that three complementary approaches could accomplish the analysis from different levels. Examining these can aid understanding of the complex and intertwined empirical research by analysing their varied explanatory powers at different stages. Nevertheless, each theory can only offer part of the explanation for what went wrong at the corresponding level in the EU-ETS, without providing any clearer resolution.

3.2.1 Theoretical approach—Multilevel governance (MLG)

This thesis refers mainly to the work of Skjærseth and Wettestad (2008a, 2008b, 2009, 2010) and the articles from Wettestad (2008; 2009a; 2009b, 2014). But the focus of this study is designed to improve our understanding of the so-called ‘national preferences’ that affected all the actors’ networking in the crucial agenda-setting processes of the EU-ETS. Rather than applying three approaches to each level, this study only uses multi-level governance (MLG) to supplement the five-stage analysis of policy process. Doing so is expected to help us to further understand: (i) what are the contextual factors in the ‘two-way interaction’ between MS and the EU institutions and how they influence MS’ implementation of EU-ETS, and (ii) how are the national preferences adjusted or even re-shaped while these contextual factors interact with EU-ETS implementation. So a brief explanation of why MLG is selected to understand the actors’ networking and agenda-setting capabilities is needed.

The MLG theory emerged in the early 1990s. It especially emphasises the *networking* and *agenda-setting capabilities* of the actors coming from diverse levels (Schreurs and Tiberghien, 2007; Braun, 2009; Boasson and Wettestad, 2013).

Although Bache and Flinders (2004:17-22) and Hooghe and Marks (2010: 18) divide MLG into two types, the emphasis on actors' networking and agenda-setting capabilities remains in both types. The jurisdiction and the dispersion of authority are allocated in a *general-purpose* way to a limited number of levels in type one MLG.²³ Also, the lower tiers are nested into the higher tiers. The actors from different levels are bound together with multiple functions, but the boundaries of membership and jurisdiction do not intersect. Since bundled issues and multiple functions are all included in a limited number of jurisdiction facilities, any kind of jurisdiction reform then become costly and unusual, which thereby makes the barriers to exit higher, as a zero-sum issue. This makes the overall structure more durable and stable.

In type two MLG; the jurisdictions are designed to be *task-specific*, and also flexible rather than durable. From the membership point of view, type two breaks the rule that smaller jurisdictions should be under larger ones. Besides that, the boundary between these jurisdictions should be partly overlapped. Therefore, unsurprisingly, the EU and its integration have become the ideal examples for this type of MLG.

Moreover, in type two MLG, the essential systemic characteristics that directly affect actors' networking and agenda-setting capabilities would be their multi-jurisdictional levels and flexible design:

- ***Multi-jurisdictional levels:*** Instead of following the traditional understanding of authority, which is divided into local, regional, national and international levels, the levels of jurisdictions should be many. The governance under type two MG should be 'multi-' or 'poly-centred'.
- ***Flexible design:*** the design of governance should be flexible in order to respond to citizens' changing preferences and functional requirements.

EU-ETS development and governance have demonstratively embodied the spirit of MLG, which is agreed by many studies (Skjærseth and Wettstad, 2008a, 2008b, 2009, 2010; Wettstad, 2008; 2009a; 2009b, 2014) under the flow of EU integration as mentioned before. But, this study intends to argue that apart from EU integration,

²³ Marks and Hooghe (2004:19) mentioned that this type of MLG usually adopts *trias politicas* structure and federalism as the ideas of MLG's intellectual and fundamental concept. So the levels in type one limited in 3, i.e. an elected legislature, an executive and a court system.

the initial CAT characteristics of the emissions trading approach also make the EU-ETS even more in line with the MLG approach. Firstly, the CAT emissions trading system has the clear task-specific (i.e. GHG reductions) feature of building up a market-based trading system. Secondly, the CAT emissions trading system highlights the need for a flexible design in governance that can take into account its market reaction to allowances trading. Thirdly, from the regulated actors' point of view, the CAT emissions trading system indirectly provides the design flexibility to choose reduction measures with cost-effectiveness. Fourthly, as a market-based instrument, it is initially true that the more actors participate the higher the market's effectiveness can be. Therefore, in the market, the boundaries between local, regional, national and international levels will be blurred, which, to an extent, will also stimulate the need for a flexible design and a multi- or poly-centred emissions trading governance system. These features then may further reinforce the influence of European integration on EU-ETS' development, governance and revisions, especially the networking among all crucial actors and the agenda-setting in revision.

However, with the increased jurisdictional levels involved in the negotiation, how to sort out the controversial preferences from different levels in the agenda-setting process then becomes the crucial part. This may not only directly shape the EU-ETS revision but also create pressures on governance structures in EU integration. The crucial blocking factor would be the national preferences (associated with either synergies or conflicts) in both directions ('top-down' and 'bottom up') of interaction between EU institutions and its MS. This is also part of what led the CEP to be described as a 'governance revolution' but with 'missions complicated' (Wettestad, 2014: 64-65). Although, since the CEP in 2008, the EU has continued to modify the EU-ETS design, the technical mechanism revisions still cannot solve the crucial inconsistent preferences, especially among MS. Under this circumstance, before further expanding the flexibility of design in governance of the EU-ETS, clearer and more comprehensive understanding of those national preferences revealed in the actors' EU-ETS implementation is necessary. Therefore, we conduct three case studies but put the MLG as a supplement tool in the micro-level analytical framework.

3.2.2 Case study approach

The thesis is based on a qualitative method with case study approach as the central research strategy. As this research aims to acquire a rounded understanding of the complicated EU-ETS implementation, the multiple case study approach should be the most suitable research strategy. To be more explicit, from several types of case study approach that were addressed by George and Bennett (2005), the case study approach with the 'process-tracing' type is selected. As this method can identify and trace the process from the targeted MS' forming awareness, changing preferences affected by the implementation of EU-ETS to their attempts to influence the EU-ETS ' revision in EU integration.

3.2.3 The criteria for selecting case study

Regarding the criteria for selecting the case studies, this research intends to build upon the articles by Skjærseth and Wettestad (2008a, 2008b, 2009, 2010) and the articles by Wettestad (2008; 2009; 2014). The articles by both scholars argued that EU-ETS revision in 2008 cannot fully be explained by the MS' changing positions. In trying to understand the process of MS' changing positions they narrowed the focus by investigating the MS considered crucial because of the sheer size of their GHG emissions share, which were UK, Germany and Poland. However, unpacking the divergences and conflicts reflected by these MS and how and why these arose is addressed insufficiently. Therefore, this study aims to research this knowledge gap by following their selections of targeted MS.

This thesis also examines these three countries by applying the following criteria to reaffirm their importance and representativeness in the EU-ETS:

- (1) GHG emissions of the country as a share of EU total annual GHG emissions, which is directly reflected in the country's share of EUAs in the overall EU-ETS per year.
- (2) The size of the country's economy and its relative power in EU's negotiation.
- (3) The inherent position of representing old MS and new MS individually in EU integration.

Following the literature review in chapter 2, the two key MS, the United Kingdom and Germany, can be easily and obviously justified with all the criteria. Because no matter

whether from the aspect of their lion's share of total GHG emissions in the EU or from their political and economic power supported by their green technology and industry, the significance and representativeness of these two MS in both EU-ETS initiation and European integration cannot be ignored.

Among all central and east European countries (CEECs), Poland with the significant coal reliance in its energy mix has become one of the most GHG emission-intensive countries in the EU (World Bank, 2011:30). This makes Poland highly 'qualified' by the first criterion compared with the rest of the CEECs. Besides, Poland has gradually but clearly shown its intention to change from 'policy-taker' to 'policy-maker' since the CEP negotiations started in 2007. Given the political actions of Poland since 2007, it seems quite convincing that Poland has gradually positioned itself in the leading role among all the transition countries. Therefore, it is fair to say that Poland's position and actions toward the EU-ETS are vital and makes Poland 'qualified' by the third criterion when comparing with the rest of the CEECs. All in all, this thesis therefore decided to select the UK, Germany and Poland as the targeted case study countries.

3.3 Other Approaches: Data Collection and Reference Sources

3.3.1 Data collection

As far as information and data collection is concerned, this study relies on documents from the EU's official websites and government reports. In line with the requirements of Article 21 of the ET Directive, the MS have to submit the report of their EU-ETS implementation to the European Environmental Agency (EEA). Thus, when certain years of national reports on EU-ETS implementation are not available, the official reports from the EEA not only fill the information gap but also reinforce the credibility of data and information. This situation happened in the case study of the United Kingdom (Chapter 4), in which the reports on 2005, 2007, 2009, 2011 and 2012 EU-ETS data are not available from the government's official reports or websites. When the Department of Energy and Climate Change (the Department for Business, Energy & Industrial Strategy since 2016) was contacted, the officer Natasha Zappone suggested obtaining the UK Article 21 report from the EEA.

In addition, apart from the EU or national inventory reports, some of the GHG emissions data are collected from private research institutions (such as Carbon Market

Data, McKinsey & Company; The Carbon Trust; The Sandbag) or international organisations (e.g. the World Bank, the International Energy Agency, the International Emissions Trading Association and the UNFCCC). Also, a huge amount of the GHG emissions data and the data of the ratified EU-ETS implementation results are widely collected from several government departments in the targeted MS. Examples are the Department of Energy and Climate Change (DECC) and Department for Environment, Food and Rural Affairs (Defra) in the UK case or the German Emissions Trading Authority (DEHSt) in German case.

The EU legal texts and the consultation documents from MS and other stakeholders are collected from the European Commission's 'The EU Emissions Trading Scheme' webpage. Additionally, since the theme of this study focuses on the EU-ETS, it inevitably involves influences from national energy mix and economic competitiveness and their impact on changing national preferences toward EU-ETS. Data like energy prices or related information about energy and economic structure are mainly drawn from the reports and publications of intergovernmental organisations such as the OECD, the Organisation of Petroleum Exporting Countries (OPEC) or the IEA.

3.3.2 Academic literature

A large number of academic works are cited and referenced in this thesis, including journals, reports, conference papers and books. Some of them provided secondary data to supplement the data analysis and comparison in each case study. But these references are also essential to build up the theoretical foundation and historical development of each crucial concept in this research- especially in understanding the corresponding backgrounds of the theoretical concept and empirical application of emissions trading and of the development of European integration. Large volumes of academic literature address both principles and practices of emissions trading. Based on these foundations, the understanding of the role of emissions trading in the EU's climate governance is built. Moreover, the fields of the literature consulted are not limited to emissions trading or the EU-ETS. To explore the sectoral level perspective on the EU-ETS, journal papers collected from sources such as *Energy Policy*, *Global Environmental Politics* and *Organization Studies* are studied intensively to provide more interdisciplinary knowledge.

3.3.3 Grey literature

The grey literature here especially means the communication and consultation documents collected by the Commission, the Council, the Parliament and the surveys done by the MS. Since the main focus of this study is on the potential synergies or conflicts resulting from national preferences, access to information to identify the preferences is even more crucial. However, considering the time pressure and limited financial resources, the author of this thesis decided not to do the fieldwork for each case study, neither through a quantitative survey or qualitative interview. Instead, the author believes that including these consultation documents and surveys can provide a more convincing understanding of the preferences formulation, the actors' involvement and positions, issues negotiation and communication. Firstly, this grey literature provides an ideal and direct route to unpack the process of policy deliberation and disclose the actual impact of national preferences on the targeted MS' attempts to negotiate the EU-ETS revisions. Secondly, this grey literature, issued and collected by EU institutions, can be seen as comprehensive surveys conducted by the EU (both qualitatively and quantitatively), on which not only the credibility and the effectiveness of the result but also the representativeness of those surveyed are sufficient to supplement this research. Therefore, rather than conducting time-consuming interviews with actors of uncertain representative value from the three targeted countries, this thesis chooses to rely heavily on these consultation documents from the EU institutions for the desk (documentary) analysis.

Apart from the government or EU reports on GHG reduction verification under the EU-ETS, online publications, announcements, or the annual reports from sectoral level (e.g. the Eurogas or the Eurelectric) or ENGOs (e.g. Greenpeace, the WWF) are by no means ignored either. These are optimal resources for providing objective analysis and data interpretation that is different from the national states' perspectives.

Chapter 4 Case Study: United Kingdom

-An initiator and a pioneer of EU-ETS within the EU?

Introduction

This chapter is the first of three investigating EU-ETS implementation and its influence on the MS' national preference formulation, which may result in national climate policy redesign after implementing the EU-ETS. Whether the synergy or conflict arising from implementing both the EU-ETS and national climate policy may in turn influence EU-ETS revision and negotiation at the EU-level may still vary state by state. Thus, this chapter will start with one of the major MS, the United Kingdom (UK), which has been known as a '*forerunner*' and an '*initiator*' since the EU-ETS was negotiated in the EU in 2000.

The structure of this case study basically follows the analytical structure that is described in Chapter 3 (page 89), which is the five-step policy analysis process, to supplement the investigation of the EU-ETS in three stages in the UK. First, the chapter starts by identifying and defining the GHG issue in the UK, in which the major problematic emitter will be targeted by looking into its economic structure and the energy mix. Second, it then focuses on the UK's attitude to the GHG issue in its domestic climate governance and its actions concerning the EU-ETS during the Europeanisation stage. In this section, the national climate policy design in the UK is illustrated for the purpose of understanding the UK's needs and interests, which may partially or even comprehensively explain its actions toward the EU-ETS later. Of course, the implementation of EU-ETS Phase I is also analysed with the emphasis on the UK's reactions to the blocks and problems it encountered during its implementation.

Third, in examining the Centralisation stage of the EU-ETS, the author seeks to understand Britain's position and its awareness of the EU-ETS revisions by analysing its EU-ETS Phase II implementation. Fourth, in studying the Reconciliation and integration stage, the author intends to find out what national attempt(s) made by the UK government can be seen as a synergy (or a conflict) triggered by its EU-ETS implementation. On the one hand, at state level, synergy or conflict may provide convincing evidence that EU-ETS implementation, as the moderator variable, is indeed reshaping or affecting the state's position and preferences. On the other hand, at the EU-level, EU-ETS implementation is also accelerating MS' actions on integrating national climate policies and energy policies into EU ones. Fifth comes the discussion,

in which a summary is provided of what the UK, as an advocate of the EU-ETS, may/can do to affect the current trajectory of EU-ETS revisions in the Reconciliation and integration stage in the EU.

4.1. Problem identification and definition: GHG emissions in the UK

According to Skjærseth and Wettstad (2008b, 2009), several domestic factors composed the MS' different ambitions and positions when initiating and implementing the EU-ETS, namely the general climate policy 'drive', the institutional fit or misfit between the domestic climate policy and the EU-ETS and their reduction commitment under the KP. Then Skjærseth et al. (2013: 66) highlighted that the influence of 'asymmetrical energy-economic interests' between MS has led to the EU's climate governance and negotiation becoming even more challenging. Wettstad (2014:65) included and defined them as the 'internal push' that has been affecting EU's climate policy-making and all of which are vital to EU-ETS revision.

But how exactly these contextual factors have formed and gradually sculpted the UK's widely-known position as a forerunner and an advocator (Wettstad et al., 2012; Wettstad, 2009a, 2014) of the EU-ETS, and whether EU-ETS implementation has in turn affected the UK's contextual factors and led to re-prioritisation, remains unclear. Besides, what these terms actually mean when put into the context of EU-ETS implementation also needs to be further clarified. Therefore, this chapter is designed to unpack how and why the general climate policy 'drive', the institutional fit/misfit among British climate policy mix, the EU-ETS and its 'asymmetrical energy-economic interests' affected the British government's actions and reactions toward the EU-ETS. In the UK case, several possible contextual factors are selected for further assessment, namely: the national energy mix and its structural change, the continuity of national climate policy instruments, and the influence of the industry lobby on the national energy-economic structure. This chapter will then assess the EU-ETS implementation in the UK, with these contextual factors actively and continuously affecting and shaping its actions and reactions toward the EU-ETS.

4.1.1 The economic structure and the historical GHG emissions trend in the UK

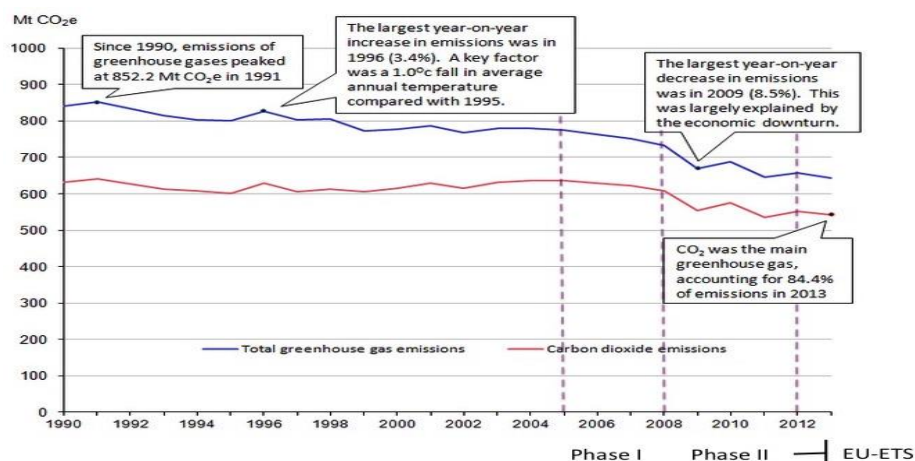
As the first country to industrialise in the 18th century, the UK has played a dominant role in the global economy since the 19th century. In the mid-20th century, the UK economy enjoyed a long period of rapid growth in prosperity. In the 21st century, the UK economy is one of the most globalised economies, ranked as the 5th largest national economy when measured by nominal GDP, 19th when measured by GDP per capita. It has a four per cent share of total world GDP and is the 2nd largest economy in the EU. Especially during the 10 years of the Blair government (1997-2007), the UK economy experienced one of the highest economic growth rates of any European nation (Davis, 2007). After that, in 2009, because of the economic recession and financial crisis, according to the figures from the Office for National Statistics (ONS), the UK experienced six consecutive quarters of negative growth, which was the longest and deepest recession since World War II (Flander, 2009). Support for the Labour party significantly decreased as a result of the recession. The Labour government was then replaced by the Coalition government formed by Conservatives and Liberal Democrats after the election in 2010. Then there was some improvement in subsequent years: the IMF upgraded its forecast for UK growth to 3.2 per cent in 2014 and 2.7 per cent in 2015 (Holehouse, 2015).

From the economic structure point of view, in 2014, the British service sector contributed around 78% of total GDP, in which financial services played an important role. The production sector's share of total GDP was 14.6 per cent, while the construction sector and the agriculture sector accounted for 6.4 per cent and 0.6 per cent respectively. So, before we investigate why the UK chose to tackle climate change and reduce GHG emissions by advocating the market-based emissions trading approach, it is crucial for us to identify how serious the GHG emissions issue is and what first caused it in the UK, by tracking its historical GHG emissions trend.

As shown in Graph 10, an overall downward trend of GHG emissions (the blue line) in Britain is clear, although between 1990 and 2013 there were 8 years in which annual emissions increased. The largest of these rises (+3.4%) was between 1995 and 1996. The Office for National Statistics (2015) concluded that the factor behind this rise in emissions was the 1.0 degree Celsius drop in mean average air temperature in 1996. The Carbon Trust (2008) argued that the declining GHG emissions from 1990 to 2005 resulted from structural change in the UK's energy mix, rather than the appliance

of any additional reduction or mitigation measures.

Another rise is the increasing emissions resulting from the economic recovery between 2009 and 2010 (+2.6%). The particularly cold weather at the beginning and end of 2010 also increased GHG emissions by increasing fuel consumption for heating. Afterwards, GHG emissions increased 1.8% between 2011 and 2012, which was due to an increase in coal use in electricity generation and, again, increased fuel consumption for heating in the colder weather of another year with below average air temperature.



Graph 10. The historical GHG emissions trend in the UK, 1990-2013 (Mt CO₂e)

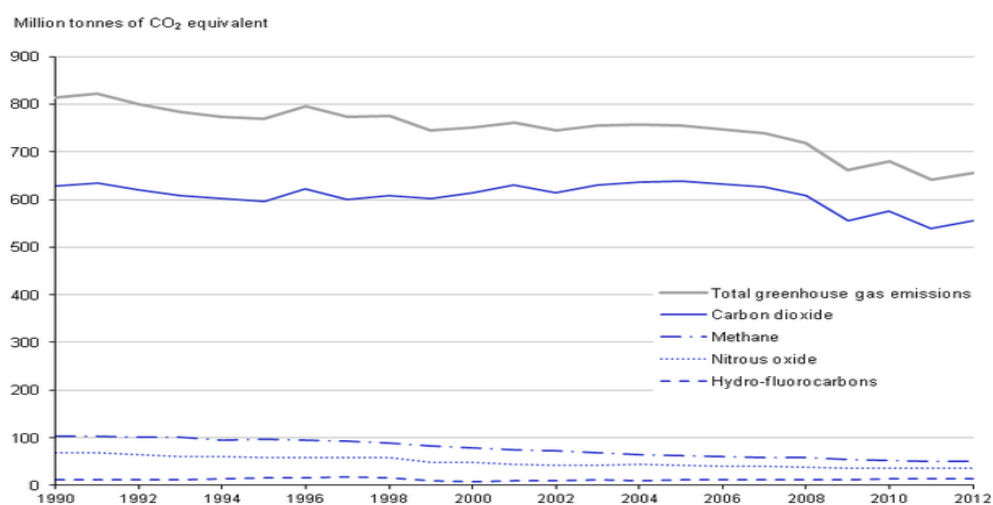
Original. Source: Ricardo-AEA, Office for National Statistics (2015).

Between 2014 and 2015 the downward trend continued, and according to Evans' analysis (2016), there was a 4.3% fall in 2015. The equivalent CO₂ output was 405 million tonnes (Mt) in 2015, which is also the lowest level since the 1920s. But following the official report from the DECC (2016), a 3.3% reduction in GHG emissions was recorded in 2015, which leaves the UK's GHG emissions 38% below its 1990 levels.

Following the trail of GHG emissions, there are several dimensions to 'diagnose' and investigate where the problematic GHG emissions come from, which are by *gases*, *fuel type*, and *source sectors*. When looking into the emissions by gases, which generally followed the basket of GHG covered by the KP²⁴ (see Graph 11), on average, CO₂ remained approximately 80% of total GHG emissions between 1990 and 2012. And worse is that CO₂ as a proportion of total emissions followed an upward trend after

²⁴ The basket of GHG under the Kyoto Protocol is: carbon dioxide, methane, nitrous oxide, and F-gases, which contain hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

2012, reaching 82% in 2012, and even climbing to 83% in 2013 (also shown in Graph 10). Methane emissions represented 10% of the total, while nitrous oxide represented 6% and other greenhouse gases 1.9% (DECC, 2014; Office for National Statistics, 2014a, 2014b). Therefore, combining Graphs 10 and 11, we can say that although GHG emissions have shown a generally downward trend in the UK since 1990, and even reached their lowest level in 2015, the success (or failure) of GHG emissions reduction in the UK is clearly and mainly decided by how it tackles and reduces its CO₂ emissions.

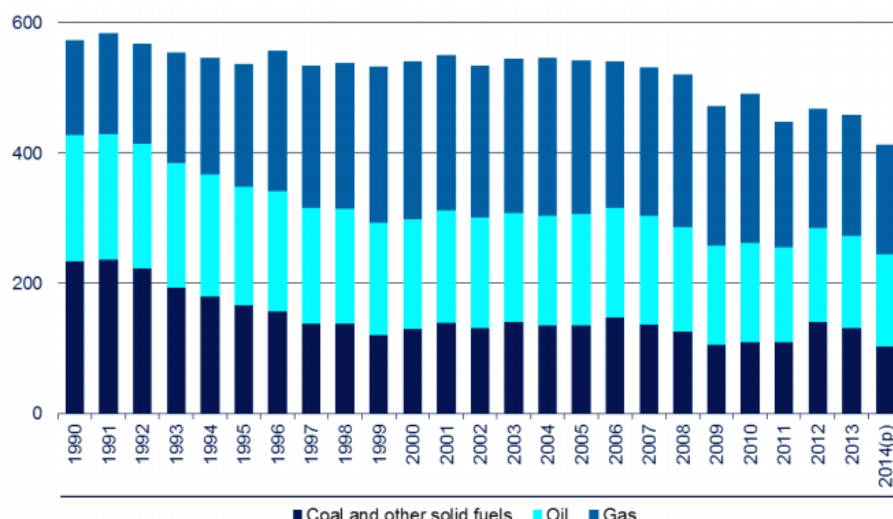


Graph 11. The GHG emissions by gases in the UK, 1990-2012.

Source: Ricardo-AEA, Office for National Statistics (2015)

*Other gases are not included, as the numbers are too small.

In contrast with gases, tracking GHG emissions by fuel type can be considered as an upstream way to record the emissions released by one unit of fuel consumption, as it varies according to the types of fuel used, which contain different levels of carbon. Investigating GHG emissions by fuel type can help to identify how the energy mix in the UK developed or changed before and after EU-ETS implementation. Apart from this, it can also help us to understand how energy efficiency and carbon intensity developed under the related policy and regulation changes. Graph 12 and Table 6 indicate that CO₂ emissions from fossil fuels decreased by 28 per cent in total, from the 1990 level. The drop in total GHG emissions from 1990 to 2014 may be the result of an increasing trend of gas use from 1990 to 2000, whilst the use of coal and other solid fuels was decreasing.



Graph 12. Carbon Dioxide Emissions by fuel type in the UK, 1990-2014 (MtCO₂)

Source: DECC, 2015

Table 6. UK Carbon Dioxide Emissions by fuels, 1990-2014, (MtCO₂e)

	1990	1995	2000	2005	2010	2011*	2012*	2013	2014(p)
Gas	146.5	189.4	241.8	235.3	228.8	193.5	183.8	185.2	168.5
Oil	193.0	181.1	169.6	171.3	151.7	144.0	143.1	142.1	150.8
Coal	219.7	152.7	117.3	124.9	100.9	101.3	130.9	121.6	94.7
Other solid fuels	14.1	13.4	11.7	10.2	8.9	8.0	8.9	9.1	8.4
Non-fuel	24.6	25.5	19.1	16.0	10.4	7.2	7.3	9.6	9.6
Total	597.9	562.0	559.5	557.8	500.8	454.0	474.1	467.5	422.0
Compared to 1990 level (%)	1	-6.6	-5.9	-5.7	-14.6	-22.2	-18.7	-20	-28.2

Source: DECC, 2014b, 2015.

* The figures listed in 2011 and 2012 are added from 2013 UK GHG Emissions provisional figure and 2012 UK GHG Emissions final figures by fuel type and end-user; the rest of the figures are from 2014 UK Greenhouse Gas Emissions, Provisional Figures.

This is reflected in the increasing GHG emissions of gas use from 146.5 in 1990 to 241.8 MtCO₂e in 2000. More explicitly, DECC (2015) estimated that in overall primary consumption of fossil fuels, gas consumption increased from 26 per cent in 1990 to 41 per cent in 2014, while coal and other solid fuels dropped from 41 per cent to 25 per cent. Oil use retained a stable share in the UK's fuel-mix over the period, at about 34

per cent in both 1990 and 2014.

In order to discover which sources directly contribute to GHG emissions, the UK government applies the definitions of ‘high-level sectors’ from the Intergovernmental Panel on Climate Change (IPCC) to look into its GHG emissions (DECC, 2014a: 6 & 2015:6) at sectoral level.²⁵ As shown in Table 7, apart from the transport sector and the residential sector, GHG emissions in the rest of the sectors showed a downward trend. Despite that, while DECC (2015) emphasised that there was a 32 per cent reduction in GHG emissions from the energy supply sector between 1990 and 2013, the energy supply sector in the UK was still responsible for 33 per cent of total GHG emissions in 2013. The worst thing is that in overall GHG emissions in 2012, 35 per cent of GHG emissions came from the energy supply sector, which was the same as the energy supply sector's proportion of total GHG emissions in 1990.

Table 7. Sources of the GHG emissions in the UK, 1990-2013 (MtCO₂e)

	MtCO ₂ e						
	1990	1995	2000	2005	2010	2012	2013
Energy Supply	278.8	238.8	221.5	231.4	206.7	203.5	189.7
Transport	121.7	122.2	126.8	130.7	120.3	118.0	116.8
Business	115.4	113.7	117.2	109.5	94.4	88.4	90.9
Residential	80.6	81.9	89.0	86.0	87.8	77.3	77.6
Agriculture	66.0	65.1	61.4	57.3	54.6	54.0	53.7
Waste Management	69.3	71.5	66.8	53.0	31.5	26.3	22.6
Industrial Process	60.0	50.9	27.2	20.4	12.5	10.5	12.8
Public	13.5	13.3	12.1	11.2	9.8	9.3	9.5
LULUCF	4.0	3.3	0.8	-2.9	-4.3	-5.0	-5.3
Total	809.4	760.6	722.8	696.6	613.3	582.2	568.3

Source: DECC, 2015

Besides, CO₂ still remained the most prominent gas in the GHG emissions of the energy supply sector (see Table 8), accounting for 95 per cent of GHG emissions in almost every year. The main source of CO₂ emissions from this sector is the use of coal and natural gas in electricity generation from power stations (IEA, 2012; DECC, 2014a; 2014b, 2015), which the upward trend of gas use in Graph 12 (page 105) can affirm.

²⁵ The definition used by IPCC are not only widely used by states' domestic GHG inventory track but also applied in the international reports submitted to the United Nations and the Framework Convention on Climate Change (UNFCCC) every year.

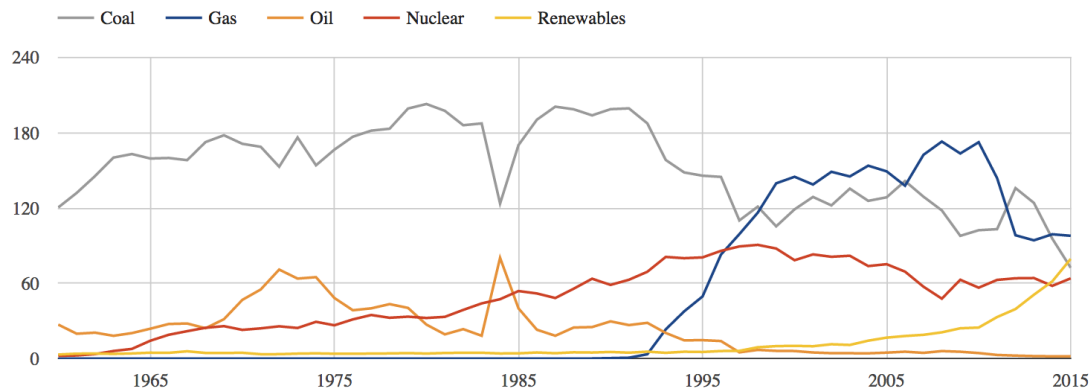
However, when looking at Table 8 again, the striking thing is that CO₂ emissions showed a falling trend (decreased from 242MtCO₂e in 1990 to 180.8 MTCO₂e in 2013), while the carbon intensity remained high. IEA (2012), the DECC (2014a; 2014b; 2015) and the Office for National Statistics (2015) attributed this to energy efficiency improvement and fuel switching from coal to gas in electricity generation. IEA (2012) emphasised the policy-driven trend to decrease the carbon intensity of power and heat generation by promoting renewable energy, nuclear power and CCS in the UK. The observation made by DECC (2015:13) may have been made partly in response to the pressure to decrease carbon intensity in power generation, pointing out that this sector's share of emissions is only a little more than a quarter of all GHG emissions in the UK. However, OECD (2011) took the opposite view that the policy-driven carbon dioxide reduction in the energy supply sector seemed to make a lesser contribution than the simple 'Dash for gas' and the economic downturn from 2008 to the end of 2009. But, by and large, it is still safe to say that the success (or failure) of GHG emissions reduction in the UK in the long term still depends on reducing CO₂ emissions in its energy supply sector, which is directly linked to the fuel mix of its electricity generation.

Table 8 Energy Supply emissions by gas in the UK, 1990-2013.

UK and Crown Dependencies, 1990-2013							MtCO ₂ e
	1990	1995	2000	2005	2010	2012	2013
Carbon dioxide	242.6	210.8	203.6	218.7	196.4	193.3	180.8
Methane	34.3	26.4	16.4	11.1	9.0	8.7	7.6
Nitrous oxide	2.0	1.6	1.4	1.5	1.2	1.5	1.4
F-gases	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	278.8	238.8	221.5	231.4	206.7	203.5	189.7

Source: final UK GHG emissions national statistics 1990-2013 Excel data tables.

Further examining the fuel mix of electricity generation in the UK (Graph 13), it is clear that coal use has sustained its downward trend since the 1990s, though there are several years of sudden increase: in 2006, 2012 and 2013. Nevertheless, the DECC (2015) estimated that coal use in generating electricity in the UK dropped by 52 per cent between 1990 and 2014.



Graph 13. The UK electricity generation by sources, 1960-2015, (terawatt hours).

Data source: DECC (2016:9) energy trends table 5.1 and historical electricity data. Chart by Evans (2016) from Carbon Brief.

Apart from coal use, another conspicuous trend in generating electricity is the increasing use of gas, which has gradually replaced nuclear and coal. The major reason is that gas has lower carbon content than coal and is also environment-friendly compared to nuclear power and its radioactive waste. However, despite EU-ETS implementation, which since 2005 has targeted the emitters in the energy sector (and energy-intensive sectors) and uses gas-based benchmarks, sudden increases in coal use and decreases in gas use still occurred in both Phase I (e.g. 2006) and Phase II (2012). Thus, this study intends to continue to unpack this puzzle by investigating the UK's energy mix and its national climate policy in the next sub-section before starting to examine the UK's preferences and position during the EU-ETS implementation and revision.

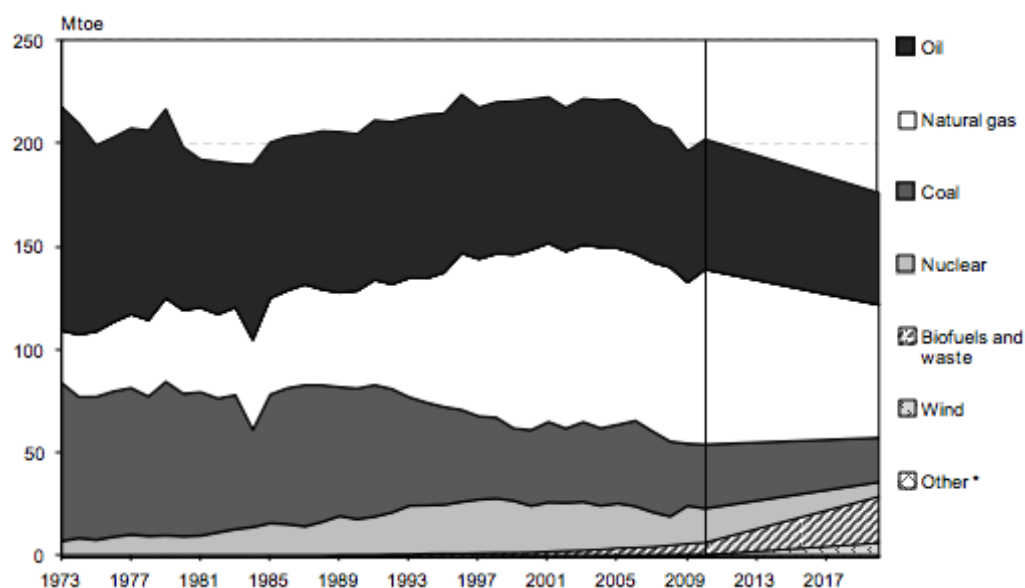
4.1.2 The Linkage between GHG emissions and energy mix in the UK

Following the investigation of GHG emissions in the previous section, the energy supply sector is identified as the major contributor to the UK's GHG emissions, in which carbon dioxide is still the major component (IEA, 2012; OECD, 2012; DECC, 2014a & 2014b; DECC, 2015). In 2013, carbon dioxide accounted for as much as 95 per cent of GHG emissions from the energy supply sector (RICARDO-AEA, 2015). Under this circumstance, only by investigating both the total primary energy supply (TPES) and total primary energy consumption (TPEC) can we unpack the reason why the feature of high carbon content remained in the UK.

Firstly, Graph 14 shows the record and the prediction of TPES in the UK from 1973 to 2020 by IEA (2012). As can be found in this graph, an obvious change took

place in 2010, which showed the beginning of a declining trend in the total TPES, accompanied by decreasing use of oil and natural gas, while the use of bio-fuels, wastes and wind energy started increasing. The UK government projected that the downward trend would continue until 2020 with an average decline of 0.9 per cent per year (IEA, 2012).

Graph 14. The Total Primary Energy Supply (TPES) in the UK, 1973-2020



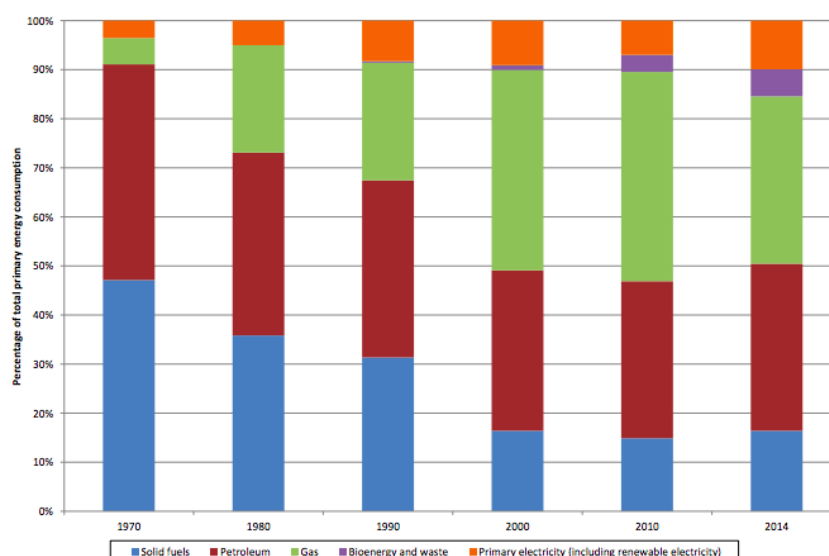
Data source: IEA, 2012; energy Balances of OECD Countries, IEA/OECD Paris, 2011 and country submission. *Others: include geothermal, solar and hydro energy.

However, as can be found in the same graph, the energy supplied by fossil fuels still remained almost 90 per cent in 2010, of which oil accounted for 31 per cent; gas 41.9 per cent; and coal 15 per cent (ibid). Compared with other IEA countries, the UK's energy mix was characterised by a large share of fossil fuels and a much smaller share of renewable energy (ibid). Also, the UK had the 9th lowest share of low carbon energy in 2008 within the EU (DECC, 2012). To an extent, this echoes the observation from the OECD (2011) mentioned before (page 107). The Committee of Energy and Climate Change (CCC) (2012) further pointed out its observation that the UK has suffered difficulty in getting investment to fulfil its renewable target under EU's 20-20-20. It also suggests that the incentives to promote renewable energy in the UK are relatively limited, even after EU-ETS implementation, in which the UK has been known as an initiator with the most pro-active attitude among all MS.

Looking back at the evolution of energy mix in the UK, there has been a significant

increase in gas use, which started with the help of North Sea gas in the 1980s. From the TPEC point of view, as shown in Graph 15, solid fuel consumption fell to around 36 per cent, with petroleum use reaching 37 per cent and natural gas rising to 22 per cent (DECC, 2015). By 2000, natural gas had become the dominant fuel, accounting for 41 per cent of all energy consumption in the UK, whilst solid fuels had decreased from 31 per cent in 1990 to 16 per cent in 2000. By 2014, approximately 10 per cent of electricity was generated from renewable sources, which can be explained by an increase in bio-energy consumption and a decrease in gas consumption. However, from 1990 to 2014, the share of electricity generated from renewable sources remained at no more than 10% of the UK's TPEC. Since 2000, energy consumption has been dominated by gas and petroleum use. The significant but small share of electricity generated from renewable sources reflected the limited either policy-driven or economic incentives for the UK to increase electricity generation by renewable energy. So it is safe to say that policy-driven incentives led to the result that gas retains the dominant share in the British energy sector while EU-ETS implementation seemed not to carry enough incentive to decrease gas use in the UK. Therefore, the difficulty of reducing GHG emissions and carbon intensity in the UK is in reducing carbon dioxide emissions in its energy supply sector, which is directly linked to the dominance of gas use.

Graph 15. The Total Primary Energy Consumption (TPEC) by fuels in the UK, 1970-2014



Source: DECC, 2015, ECUK Table 1.02

4.2. The UK's Reactions and Actions toward Climate Change

4.2.1 Reactions and actions from the domestic policy network

A. The actors and features of British climate governance

The UK's position on climate change evolved during the process of developing environmental policy. More precisely, it was far from the 'pioneer' that it is called today. With severe domestic air pollution (e.g. the 'Great Smog' in London in 1952), the UK government adopted the Clean Air Act in 1956. Mosley (2014) has regarded it as a crucial milestone in British environmental protection because it not only established 'smokeless zones' but also provided generous subsidies to householders to convert to cleaner fuels (for example gas and electricity). Globally, in the 1970s and 1980s, issues such as acid rain and climate change emerged and gradually attracted the public's attention. But, even when facing global pressure to sign international conventions, Britain with its conservative government objected to joining the global action in reducing the high level of sulphur emissions from its power stations. Thus, at that time, Britain was labelled the 'dirty man' of Europe (Eikeland, 1998).

When Mrs. Thatcher set to work on privatising the electricity supply industry in 1987 and launched the New Electricity Act two years later, environmental concerns were actually not yet on the UK government's policy agenda. But the first electricity reform in the UK provided the vital point and indirectly accelerated the construction of the UK's climate change agenda. As a result of replacing coal-fired capacity with natural gas, environmental improvement occurred and was recorded by the UK. However, the reality is that aside from the '*Dash for gas*', there was no real improvement for renewable energy or other green technology at this stage (Eikeland, 1998; Fouquet, 1998; Carbon Trust, 2008). Also, at this point, the UK government's priorities were largely focused on domestic and mainly non-environmental matters (Rayner and Jordan, 2012: 97). But this 'fortunate experience' of environmental improvement let the UK realise that putting greater emphasis on environmental issues might not necessarily threaten the UK's original development agenda domestically, e.g. electricity reform or economic growth. What's more, regionally, it helped the UK to acquire advanced status with more influence in the beginning of setting climate change policy in the EU arena.

After the White Paper was adopted and presented in the UK in 1990, the environment became more prominent in the UK's policy agenda. It covered most of the

current environmental issues. More importantly, it clearly expressed the UK's support for market-based instruments to stabilise GHG emissions (Jordan, 2001; Pearce, 2006; Rayner and Jordan, 2012). In 1993, the Major government (1990-1997) signed the UNFCCC and agreed to reduce its GHG emissions to the 1990 level by 2000. Since then, environmental issues have become a feature of political campaigns in the UK, which may partly explain why there was a relatively ambitious programme starting from the New Labour government in 1997 (Bailey, 2008) (See the Table 9 on the page 114).

As listed in Table 9, the New Labour government showed a positive attitude to tackling climate change, which was reflected in its actions, both globally and domestically. Externally, the Blair government used the G8 and its 'special relationship' with the US to re-engage the Bush administration on climate change. Domestically, the Climate Change Programme of 2000 was adopted to help the UK reach its targets under the KP. Besides these, with the help of the Royal Commission Report (RCEP, 2000), the pace of climate policy-making in the UK has sped up in recent decades. The Climate Change Levy (CCL), linked with a national UK emissions trading system, i.e. UK-ETS, was introduced in this period, and all of these have become major components in UK's climate governance. Thus, it is the Blair government who acted as the pioneer and set their minds to applying a market-based instrument in the UK. After that, the Climate Change Bill, and the Low Carbon Transition Plan were also brought into force before the last year of the Blair government in 2007.

According to Rayner and Jordan (2012), the reason why the Blair government showed greater involvement in international climate diplomacy was to move public attention away from his much-criticised Iraq policy. Meanwhile, from the regional politics and EU development perspective, it cannot be denied that EU membership bolstered the development of climate policies in the UK. Domestically, without environmental groups and industry groups providing technical knowledge and consultancy on practical aspects, the environmental policy development would not have been able to accelerate after the change of government from Conservative to New Labour in 1997 (Bailey, 2008).

In 2007, several institutional authorities were established to implement climate policy integration, which successfully combined the involvement of several key departments, e.g. transport, finance and trade. Under this circumstance, a new Office of Climate Change was set up. Then in 2008, the Department of Energy and Climate

Change (DECC) was established by the Brown Government, which formed a special devolved authority to bridge the British government and its sub-national authorities. The ‘machinery’ of UK government was adjusted significantly in order to deal with policy negotiation and integration among the departments. During all phases of EU-ETS implementation, the UK government largely delegated its authority to and relied on help from its devolved authorities and supporting institutions, which gradually changed the administrative system in the UK.

Table 9. The government structure changes and reactions to climate change.

Stage	Europeanisation	Centralisation	Reconciliation and Integration
Year	2002-2007	2008-2012	2013 to present
Government	Blair Government 1997-2007	Brown Government: 2007-2010 Cameron Government: 2010-2016 Theresa May: 2016 to present [conservative]	
	New Labour	Labour	Conservative and Liberal Democrat coalition
Attitudes	Active / A pioneer	Active/ A Pioneer	Less active in taking the lead
Actions	Globe: <ul style="list-style-type: none"> ▪ G8 ▪ ‘Special relationship’ with the US. 	Globe: <ul style="list-style-type: none"> ▪ COP15 of the UNFCCC in Copenhagen. ▪ Heavily involved in international negotiation. 	Globe: <ul style="list-style-type: none"> 2015: Joined world leaders to launch mission Innovation at the UNFCCC.

	Domestic: <ul style="list-style-type: none"> ▪ Climate change Programme (2000); ▪ Climate change Levy (2001) ▪ Climate Change Agreements (2001) ▪ UK-ETS (2002) ▪ The Climate Change Program Review (2004) ▪ Climate Change Bill (2007); ▪ New Office of Climate Change (2007) 	Domestic: <ul style="list-style-type: none"> ▪ Climate change Act (2008) ▪ Low carbon Transition Plan (2009) ▪ Established the DECC (2008); ▪ Established the Committee on Climate Change (CCC). 	Domestic: <ul style="list-style-type: none"> ▪ 2016: Brexit referendum. ▪ 2016: DECC and the remaining functions of the Department for Business, Innovation and Skills were merged to form a new Department for Business, Energy and Industrial Strategy. ▪ 2017: triggered Article 50.
Major government department	Defra	DECC; Defra	2016: DBEIS

For the task of implementing the EU-ETS, the supporting institutions included: the Department for Environment Food and Rural Affairs (DEFRA), the Department of Trade and Industry (DTI), the Department of Energy and Climate Change (DECC), and the devolved authorities of Scotland, Wales and Northern Ireland (Defra, 2007). Two departments, DECC and DEFRA have played key roles in leading the EU-ETS in the UK. These two are not only the bridges connecting all devolved authorities horizontally but also the platform to connect all the stakeholders involved in the EU-ETS vertically by means such as conducting surveys, providing plenty of consultation documents on crucial issues, and data collection needed in the EU-ETS. In the same Table 9, internally, based on the world's first ever Climate Change Act in 2008, which was introduced by the Brown government, an independent body, the Committee on Climate Change

(CCC)²⁶, was then set up to take responsibility for proposing the carbon budgets, examining the long-term emissions reduction targets and providing recommendations for climate change policies to the government (OECD, 2011). Externally, the Brown government continued to show an active attitude to climate change, like the Blair government before. Apart from that, it was also heavily involved in the COP15 of the UNFCCC in Copenhagen to reach a global agreement to succeed the KP.

To conclude the above, the major feature at the starting point of climate policy in the UK is that it was simply triggered as a by-product of the electricity reform (structural change). Then, several factors brought the UK into a much more ambitious stage, by which the increase in environmental legislation formed a broad foundation for the market-based instruments in the UK at the beginning of the 2000s. First, there was enforcement pressure from international treaties (e.g. the UNFCCC and the KP). Second, there was the change of government from Conservative to New Labour in 1997. Third, since 1997, in order to implement the climate policy integration from the EU, several changes and expansions have happened in the British institutional structures (both Blair and Brown governments). The institutional changes further improved the cooperation and collaboration among central government, special ‘devolved authorities’ and sub-national authorities, which helped the UK government to assimilate the EU’s climate policy design more quickly. Therefore, adding the consultation-based tradition in British policy-making process into the bridging role of these devolved authorities, the information asymmetric problem or the misfit between the ‘machinery’ of UK government and regulated actors, were minimised in the UK.

B. Policy instruments applied in British climate governance

Baily (2008) argued that the UK’s climate change policy-making, as with other policies in the UK, is highly shaped by British political philosophy and involves wide consultation networks. From frequent consultations, the UK government acquires scientific knowledge from both academia and industry to formulate in a more achievable way policies that fit the stakeholders’ needs. Although plenty of legislation

²⁶ According to the Climate Change Act in 2008, an independent, statutory body called ‘the Committee on Climate Change (the CCC)’ is established for advising the UK Government and its Devolved authorities referring to emissions targets. Also, the CCC shall report to the Parliament on the progress of reducing GHG emissions in domestic. Details can be found on: <https://www.theccc.org.uk/about/>.

in the UK has been limited or bolstered by the EU since the UK joined the EU, the internalisation of EU laws into UK's legal system still largely depends on UK's initial policy-making style. And based on inherent wide consultation networks, the non-government actors (e.g. industry, unions or NGOs) can exert more influence on the policy-making process by providing scientific and technical knowledge (Lowe and Ward, 1998; Richardson, 2000; Bailey and Rupp, 2006; Bailey, 2008). This fills in the information gap, reducing the asymmetry problem, and increasing the willingness and motivation for implementation among regulated industries as well.

As mentioned before, after the Labour Party won the general election of 1997, the UK started showing even greater ambition to tackle climate change. In 1998, after consulting with the energy sector, industry and expert groups, the Marshall Report (1998) affirmed that acceptance by industry of market-based instruments (MBIs) was broad, but it also needed the long-term intention from the government to mitigate the economic impact and maximise the environmental impact of MBIs. The UK government consulted on the recommendation and then launched the Climate Change Levy (CCL) in 2001. The basic elements are listed in Table 10.

Table 10. Basic elements of the CCL

CCL	Notes
Target	Industry only: non-household use of coal, gas, electricity, and non-transport LPG.
Exemption	Fuel used for the household and transport sectors; fuel used for electricity generation and non-energy use, and waste-derived fuels; renewable energy. The 'GQCHP', i.e. good quality CHP, was exempted from 2002.
Style	Downstream and single-stage sales tax.
Calculation way	Per unit of energy.
Revenue	'Recycled' back to CCL participants in the form of reductions in employer National Insurance (NI) contributions.

Sources: Pearce (2006); Bailey (2008); Rayner and Jordan (2012).

Three important features of the CCL should be noted. Firstly, as Rayner and Jordan (2012:102) argued, it was the most significant eco-taxation measure to date, which can largely be attributed to the recommendations made by the leading industrialist, Lord Marshall. Secondly, this policy-making process clearly reflected the stereotype of British politics when formulating its environmental policy, with the political compromise to ease the CCL's impact on energy-intensive users and to avoid disproportionate effects on households,²⁷ and the scale of the concessions made by the UK government (as listed in Table 10). Exemptions include the main GHG emitters in the electricity generation sector, transport sector and the fuel used by households. This means the CCL is an eclectic energy tax rather than a carbon tax (Pearce, 2006). Thirdly, most of the revenues from the CCL are 'recycled' back to the industries under the CCL, in the form of reductions in employers' social security tax (NI), which tends to encourage employment. As well as this, part of the revenue is assigned to encouraging energy efficiency improvement and developing renewable energy through a new institution, the 'Carbon Trust'.

Though the initial objective of the CCL was to stimulate energy efficiency, several crucial design features and those exemptions indicated its limitations and conflicts. Firstly, natural gas with lower carbon contents is levied at the same tax rate as coal, which means the opportunities to strategically switch between these two fuels remain (as investigated before). This largely reduces the theoretical incentives of the CCL to improve energy efficiency in its practical enforcement. Pearce (2006) considered that this reflected the Labour government's adherence to coal mining. Secondly, the 'downstream' style of the CCL leads to greater difficulty in tracing back to the fuel sources (*ibid*). Thirdly, the exemption of households and especially the transport sectors strongly reflects the political motivation of the Labour government to secure its votes, as these sectors are more price-vulnerable to the higher tax.

So, with the concerns of the controversy and the leakage caused by the CCL, the UK government attempted to negotiate with industry to initiate the Climate Change Agreements (CCAs) (Advani et. al, 2013). These included 44 energy-intensive sectors and allowed eligible facilities to get an 80% discount on their CCL charge in exchange

²⁷ In order not to lose the major support from coal mining sector, which was one of the important reasons that the Labour could win the election, the government would try not to build up controversy to its influential supporters

for adopting voluntary targets to improve their energy efficiency (Defra, 2002; Bailey, 2008; Rayner and Jordan, 2012). After that, in 2002, the UK Emissions Trading Scheme (UK-ETS) was introduced to facilitate meeting the UK's climate targets. From then on, the UK's climate policy design contained three different instruments, which are: the energy tax (i.e. the CCL), the voluntary agreements (i.e. the CCAs) and the emissions trading (i.e. the K-ETS).

In order to find a correlation between the domestic UK-ETS experience and the UK's attitude and preference toward the EU-ETS at a later stage, this thesis intends to demonstrate the UK-ETS' development by examining the differences between the UK-ETS and the EU-ETS (see Table 11).

Table 11. The basic elements of the UK-ETS.

	UK-ETS *	EU-ETS
Type	Cap-and-trade	Cap-and-trade
Scope	Unilaterally and confined to the UK.	Linked to the Kyoto compliance period of 2008-2012.
Voluntary/mandatory	Voluntary emissions reduction with incentives provided by government funds (£215 millions)	Mandatory participation for GHG emissions reductions.
Targeted sectors	Direct participants & CCAs participants [Energy-intensive sector]	Energy sector Energy-intensive sectors
Permits allocation approach	Descending-clock auction. Government sets a price per tonne (price floor).	Phase I: free-allocation based on NAPs. Phase II: free-allocation, part by benchmarking and part by auctioning. Phase III: mainly by auctioning but with certain exceptions of free-allocation for the MS in transition.
Linkage to CCL/CCA	CCAs participants can buy permits to meet the targets	CCAs: opted out from Phase I Consider that the scale of

	under the CCAs but also retain reduced-rate in the CCL, or sell/bank surpluses as insurance for future use. i.e. bankable.	regulation of the CCL is wider than EU-ETS' scale, the CCL and the EU-ETS implemented in parallel in the UK.
Periods setting	From 2002 to 2006. Then integrated into EU-ETS in the UK.	Phase I: 2005-2007 Phase II: 2008-2012 Phase III: 2013-2020

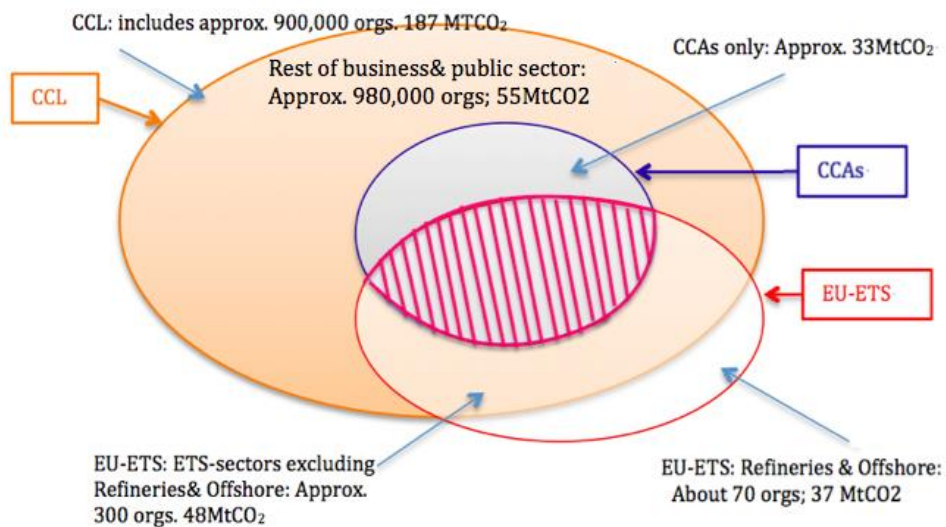
* Sources: Defra, 2003; Pearce, 2006; Bailey, 2008.

Two crucial characteristics, noted in Table 11, are worth highlighting:

- a. Voluntary but with incentives from government funds
- b. Descending-clock auction with price floor setting

According to the UK-ETS' practice, the voluntary aspect with economic incentives from government funds can not only diminish the regulated actors' opposition but also reduce emissions and offset abatement costs. Also, the permits under the UK-ETS were allocated by the 'descending-clock auction', which was to emphasise the application of the 'polluter pays principle'. Permits that are allocated by auction can also stabilise the carbon price, which reflects the equilibrium price between the supply and the demand. This is also the reason why the permits market in the UK-ETS did not experience the over-allocation or price collapse problems that occurred in the EU-ETS under the free-allocation approach. From the regulation scope point of view, the CCA and the UK-ETS were the only two opt-out options in the first phase of the EU-ETS in the UK. But, after the UK-ETS had been ended in 2006, its participants then joined the EU-ETS from 2007; and the regulated actors under the CCAs also entered the EU-ETS in 2008 (Defra, 2008).

A synergy clearly emerged between the EU-ETS and the UK's national climate policies, and this further emphasised the importance of the carbon price signal in the implementation of these policies (as shown in Graph 16).



Graph 16 Climate policy instruments in the UK.

Source: Simplified graph from the OECD report written by Bowen and Rydge (2011: 21).

So it may be safe to sum up the above as follows: i) before the implementation of EU-ETS, the UK's climate policy mix had already shown consistent market-based and market-friendly characteristics among all three approaches. But after implementing the EU-ETS, the linkage and overlap among these national policies became obvious and they were gradually integrated with each other (Pearce, 2006). This close linkage among policies has strengthened the importance and the need for a robust carbon price signal in the UK's climate policy mix. ii) With the experience gained from the UK-ETS, the UK believed that a scheme that was 'voluntary with economic incentives' and the allowances allocated by the 'descending-clock auction plus price floor setting' could help to produce a more meaningful and steadier carbon price signal. This explains why the UK has advocated EUA allocation through auction since the EU-ETS was initiated, and price floor setting for allowances later.

C. The climate commitments of the UK

Regarding climate commitments, through the Conservative government (1980s-1997), the New Labour governments of Blair (1997-2007) and Brown and then the Coalition government (2010- 2014), the UK committed itself to several climate goals, both domestically and globally (See Table 12 on the next page). Apart from the voluntary agreement adopted in the UNFCCC, the UK, as a member of the EU, also signed up to the first commitment period of the KP. Taking the BSA adopted in 1998 into consideration, the UK then had a target to reduce its GHG emissions by 12.5% below its base year (1990) level before the year 2012. More precisely, according to the DECC's calculation, this commitment meant that

‘ [...] to meet the UK's Kyoto commitment, greenhouse gas emissions must be below 682.4 MtCO₂e on average per year over the first five year commitment period of the Protocol (2008-2012). [...] the Kyoto Protocol target for the UK was then set at 3412 million tonnes carbon dioxide equivalent over the full five year period—this is now the UK's Assigned Amount (DECC, 2014:34).’

Subsequently, the UK unilaterally announced a long-term target of a 60% reduction by 2050 in the Energy White Paper of 2003. Then, in the *Climate Change Programme Review*, the UK government strengthened its ambitious climate target by promising to reduce its CO₂ emissions to 20% below the 1990 level by 2010. Furthermore, the UK emphasised the importance of the EU-ETS by indicating that with the contribution from the EU-ETS, the Government would achieve CO₂ emissions reduction by 2010 of 15-18% below the 1990 level in the Climate Change Programme Review (Defra, 2007). In other words, the UK government expected to meet its KP commitment under the BSA two years earlier than the Kyoto commitment period (2012) with the help of EU-ETS implementation.

Table 12. The UK's climate commitments

Year	Gases	Targets	Notes
1992 UNFCCC, Rio	CO ₂ only	2000 emissions no greater than 1990 emissions.	Achieved with electricity privatisation. Supported by conservative government.
19997 Labour Manifesto	CO ₂ only	2010 emissions 20% less than 1990 emissions (a unilateral target).	Government announced in 2004 that it was very unlikely to meet this target
1997 Kyoto Protocol	All GHGs	2008-2012: Emissions 12.5% below 1990 level. Mandatory in the EU law.	Met its share under the Burden Sharing Agreement (BSA) in 2010.
2003 Energy White Paper	CO ₂ only	Around 2050, emissions 60% less than 1990 'with real progress by 2020'. Not mandatory.	A unilateral goal; Remained conditional on other non- EU countries' climate commitments.
2006 Climate Change Programme Review (CCPR)	CO ₂	Reduce CO ₂ emissions to 20% below 1990 level by 2010.	CCPR: <i>with the help of EU-ETS</i> , the UK would achieve CO ₂ emissions reductions by 2010 of 15-18%.
2008 Climate Change Act	All GHG	Reduce emissions by at least 80% below 1990 level by 2050.	To reduce GHG emissions by at least 34% below 1990 level by 2020 (national).

Sources: Pearce (2006); Defra (2007); DECC (2014)

When the EU negotiated the CEP in 2008, the UK government also pledged further long-term carbon budgets in its *Climate Change Act*. It contained even more ambitious carbon reduction targets unilaterally at the national level, which strengthens and echoes the UK's ambition and determination to take the lead in tackling climate change not only in the EU but also globally. Within the Climate Change Act, the UK committed itself to reduce CO₂ emissions by at least 80% below its 1990 baseline by 2050. In order to set a clearer pathway to meet this ambitious target and to supplement EU-ETS implementation, the UK also placed limits on the total amount of GHG emissions for each five-year period till 2027 (Table 13). These carbon budgets are expected to bring those non-ETS sectors on board to further reduce overall GHG emissions in the UK.

Table 13. Summary of UK Carbon Budgets, 2008-2027 (Unit: MtCO₂e)

Budgets	2008-12	2013-2017	2018-2022	2023-2027
Budget level	3,018	2,782	2,544	1,950
Equivalent average annual emissions	603.6	556.4	508.8	390.0
% Reduction from Base Year (1990)	23%	29%	25% by 2020	50% by 2025

Source: DECC (2014:35). Available at: gov.uk.

As shown in Table 13, the first carbon budget period is coincident with the Kyoto commitment period (2008-2012), and the annual emissions volume (603.6 Mt CO₂e) allowed by the Climate Change Act is also far below the average amount of emissions per year under the KP target (682.4 MtCO₂e). Politically, this suggests that the British government is ambitious to take a lead both within the EU and globally. Domestically, the long-term carbon budgets set by the Climate Change Act also provide greater certainty over the pursuit of a de-carbonised economy and a more stable green technology investment environment in the long run. Moreover, the base year set in the Climate Change Act is the same as the one used in the KP, which is the year 1990 for CO₂, methane and nitrous oxide; and the year 1995 for fluorinated compounds. The consistency on the base year setting is essential to make sure that the long term national climate plans can be based on the same standard and bridge to the international climate regimes and treaties. However, although the base year remains the same, the difference is that the figure of emissions for 1990 was not fixed by the Climate Change Act. So

according to DECC (2014:35), the figure of 1990 emissions volume used by the UK would be revised each year and adjusted as the 1990-2005 emissions data are updated.

To sum up, the meaningfulness of climate commitments forms one of the conditions of leadership (i.e. directional leadership) in climate governance, especially for the EU, which has long applied the strategy of ‘leadership by example’ both externally and internally. The vital factor if this strategy is to work is credibility, which is accumulated and aggregated from the MS jointly taking actions. From the UK’s domestic actions of reaching climate targets since the early 1990s, the UK can be understood as the major provider of credibility to the EU. Besides, as can be seen in Table 12 (on page 122), the UK’s position and its positive attitude toward the EU-ETS can be found within the Climate Change Programme Review (CCPR) in 2006. Under the CCPR, the national climate policies of GHG reduction clearly put the EU-ETS at the centre. The action also partially reaffirmed the UK’s ambition to pursue the role of pioneer and advocator of the EU-ETS.

4.2.2 The implementation of EU-ETS in the Europeanisation stage (2000-2007)

A. The actions of implementing the EU-ETS in the pilot phase (2005-2007)

The impact of implementing the EU-ETS on the MS depends not merely on the cap-setting. As Defra suggested (2007), it depends on three factors, which are: the level of the cap, all the aspects of implementing EU-ETS and other carbon reduction policies. More precisely, both regulators and regulated actors play essential roles in determining the efficacy of emissions trading in GHG emissions reduction and all the costs of implementing it. In the case of the EU-ETS, they are governments and the regulated ETS-sectors. The former has to connect and coordinate between EU-ETS and domestic reduction policies. The latter dominates the reduction ‘effort’ and how to meet targets under EU-ETS.

Rayner and Jordan (2012) argued that EU-ETS implementation in the UK is one of the minority of instances in which the UK has not generally implemented its EU obligation (2012: 106). But the analysis of EU-ETS implementation results provided by the UK government shows that the UK is generally supportive with cautiousness. Beside this, as illustrated in the first section of this chapter, the EU-ETS internalisation and implementation in the UK seemed to make the best use of its policymaking tradition, i.e. great reliance on industry groups providing the necessary data, practical and technical knowledge through comprehensive consultations, both unofficially and

officially. Looking at Table 14, in Phase I, the annual cap set by the UK government was 245.4 Mt MtCO₂e. In 2006, a total of 217.7 million EUAs were issued and allocated for free to UK's installations under the EU-ETS. The verified emissions in 2006 were 251.0 MtCO₂e, which means the deficit was 33.3MtCO₂e, i.e. ETS-sectors' total emissions in 2006 were higher than their allocations. Also, from 2005 to 2006, ETS-sectors in the UK increased their emissions by 8.7 MtCO₂e, and the shortfall of allowances reached 6.2 million EUAs.

Table 14. Selected information of EU-ETS Phase I in the United Kingdom: (Units: Mt CO₂e)

	2005	2006	2007
CAP	245.4 Mt CO ₂ e / year		
Base year of grandfathering	1998 (234 MtCO ₂ e)—2003 (276.6 MtCO ₂ e)		
Total Installations	690	703	753
Free EUA allocation	229.8 Million	217.7 Million	228.8 Million
New Entrants Reserves (NERs)	15.6 MtCO ₂ per year, 6.3% of total cap, [in which, 4.6 Mt/yr for GQCHP]		
Auctioned EUAs	Only of unclaimed NERs		
Emissions from ETS-sectors	N/A	73% Power sector 8% iron& steel sector 7% refineries sector	69% Power sector 8% iron& steel sector 7% refineries sector
Verified Emissions	242. 5 MtCO ₂ e	251.2 MtCO ₂ e	256.4 MtCO ₂ e
Verified emissions - Allocations	-12.7 MtCO ₂ e	-33.5 MtCO ₂ e	-27.6 MtCO ₂ e
CAP - Verified Emissions	+2.9 MtCO ₂ e	5.8 MtCO ₂ e	-11 MtCO ₂ e

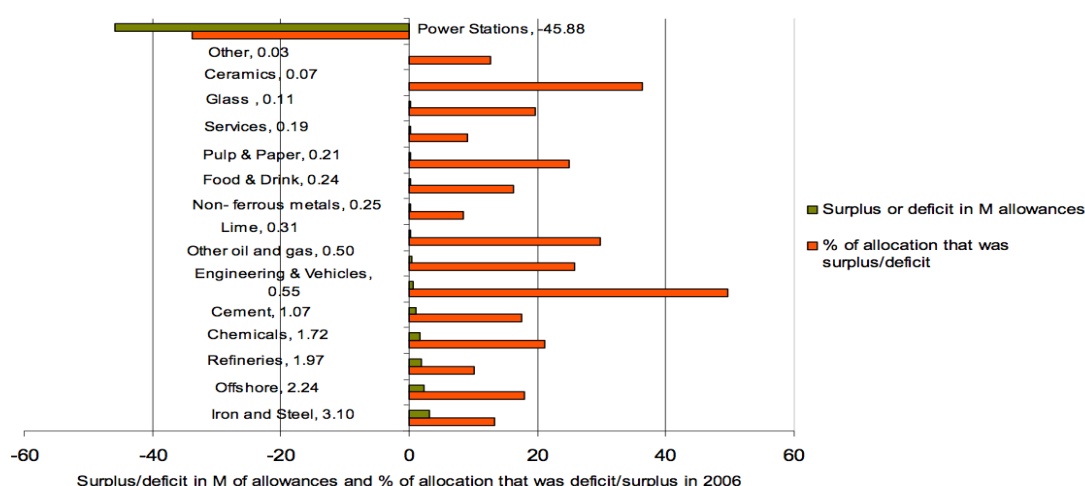
Sources: Defra (2006, 2008)

Moreover, still in Table 14, in 2006 and 2007 of Phase I, the total emissions from all installations in the UK were higher than its national cap. Verified emissions in the first phase reached 750 MtCO₂e, which is 13% higher than the total allocation (Martin et al.,

2012). Therefore, the UK was a net buyer in the EUA market in the first phase and, unfortunately, the UK failed to fulfil its emissions reduction in Phase I.

According to the *EU Emissions Trading Scheme: UK Results 2006 Report* (Defra, 2008), the excessive GHG emissions mainly came from the power sector. As shown in Graph 17, the power sector's emissions were 45.9 Mt MtCO_{2e} (33.9%) more than its total allocation. The emissions from the rest of the ETS-sectors were less than their total allowances allocation. Referring to the same report; all the other sectors emitted 69.5 MtCO_{2e} in total. Since their total annual allocations were 82.1 million EUAs in 2006, they had a surplus of around 12.6 million allowances (15.3%).

Graph 17. The surplus/deficit in allowance allocation by sectors:



Source: Defra (2008). Note: 'M of allowances' means million allowances.

Still in Graph 17, of the surplus in 2006, the share coming from the iron and steel sector was the greatest (3.10 million EUAs), accounting for about 13% of the total sector allocation in 2006. However, since the emissions reduction would be assessed in an aggregated way, even the surpluses in the rest of the ETS-sectors could not offset the excessive emissions from the energy sector in 2006.

B. The reactions to the implementation of EU-ETS in the pilot phase

Among all the ETS-sectors, the power sector in the UK is the only sector that received lower allowances than its BAU emissions. From the UK government point of view, compared with other energy intensive industrial sectors under the EU-ETS, the power sector faced limited international competition and had relatively large low-cost abatement opportunities (Defra, 2008:12). As a result of that, the power sector became

the main driver of emissions reduction in Phase I in the UK (Wettestad, 2009). However, it did take time for the reduction result to emerge after implementing abatement measures. This could also be partly explained by the fact that the British power sector needed not only a stringent cap to stimulate its abatement investment but also a longer time to reduce its emissions. In other words, the British energy sector needed a more meaningful carbon price signal with higher economic incentives under the standardised design of EU-ETS. According to Defra's calculations, 44.8% of installations in the power sector had a total deficit of 53.7 million allowances, which made the UK power sector a net buyer of allowances, buying either from other sectors or from other MS with surplus EUAs. Although the overly low EUA price seemed beneficial in the short term, in that it would not increase production costs, the only way to ensure GHG emissions reduction in the long term is by investing in abatement measures, which largely relies on the carbon price from the EU-ETS to stimulate the virtuous circle of green investment.

The UK energy-intensive industrial sectors showed a more positive attitude toward the EU-ETS than their German counterparts, which might be because of the general positive impression from the previous experience of implementing the UK-ETS. Also, considering the main driver of abatement was focused on the energy sector, the energy-intensive industrial sectors received relatively generous EUA allocation. For example, according to the ENDS report (2007:12), the British ceramic sector received 50 per cent more EUAs than they actually needed. This is believed to relate to the concern over industrial competitiveness (Carbon Trust, 2004). And this can partly explain why the British government has taken better care of the energy-intensive industrial sectors since the first NAP drafting in exchange for their support for internalising the compulsory EU-ETS to gradually replace its UK-ETS, which was based on voluntary participation.

Apart from the over-generous EUA allocation for energy-intensive industrial sectors, Defra proposed that the other possible reason for the over-allocation in the first phase of the EU-ETS in the UK is that the Commission rejected the UK's final version of the NAP. The UK government insisted that this version contained more accurate data on projected economic growth and GHG emissions. Though the British government took the Commission to the ECJ and questioned its legitimacy to 'reject' NAPs prepared by its MS, the UK abandoned this case in the ECJ to prevent further uncertainty that might have undermined investment confidence and the introduction of the EU-ETS in the UK (Rayner and Jordan, 2012).

After the EU-ETS started functioning, as a pioneer of emissions trading, the British government and its ETS-sectors showed a clear preference for pursuing a more harmonised EU-ETS design and a clear standardised NAP. (Point Carbon, 2005; EU Energy 2006; Wettestad, 2009). Firstly, the British government specifically pointed out the problem in the trial phase of the EU-ETS resulting from different interpretations of ‘combustion sectors’ in the Regulatory Impact Assessment (RIA). After the meeting of WG 5/6 of the UK Emissions Trading Group in 2005, the ETS-sector sub-group²⁸ stated a clear preference for clarifying the definitions of installations, as quoted in the following text:

‘Further clarity is needed on the extent of the installations covered by EU-ETS to overcome differences in definitions between DEFRA and the Environment Agency (UK ETG, 2005:2)’.

Then Defra (2006) observed that 13 MS adopted a broad interpretation of combustion installations, which contained all combustion units, whereas others, including the UK, used a more limited interpretation. This was: *‘a combustion installation as a stationary technical unit that burns fuel for the production of an energy product (which could be electricity, heat or mechanical power) (Defra, 2006:4)’.*

Afterwards, the UK collaborated with France and the Netherlands to develop a definition of ‘combustion sector’ that was intended to limit the extra impact on small installations and on competitiveness. Other MS showed broad acceptance of the definition, as recorded in the minutes of the official *Climate Change Committee*, which was chaired by the Commission to incorporate representatives from all MS. Eventually, this new definition became the basic definition of a combustion installation in the Commission Guidance and was applied in Phase II. Defra (2006:4) indicated that this definition of combustion installation, with a pragmatic approach in the Guidance, was broadly in line with the UK’s consultation document of 2005. Although the Commission Guidance is not legally binding, it still owns ‘persuasive authority’ and will be taken into consideration when the ECJ interprets the Directive (Defra, 2006:5).

There are at least two points that can be summarised at this stage. The development

²⁸ According to the minutes of WG 5/6 meeting (2005), the sub-group contains: the representatives from RWE power, Chemical Industry Association, British Glass and British Ceramic Confederation... etc.

of EU-ETS at the EU level can be seen as a successful example of the UK being involved in and affecting the EU-ETS design in accordance with its national preferences. As for the stakeholders in the EU-ETS, it is fairly clear that, in the UK, these ETS-sectors (especially the energy intensive industries) are far more active and also positive towards the emissions trading approach.

Secondly, with the issue of standardised NAPs, although the ET Directive indeed provided guidelines, major concern remained on the decentralised cap setting process in the trial phase, which not only affected the efficiency of the EU-ETS but also made the drafting of NAPs politically complicated. Under time pressure and the pressure of industry lobbying, the decentralised EU-ETS led to the problem of a ‘race to the bottom’ with over-generous national caps among the MS’ NAPs submissions to the Commission (Skjaerseth and Wettestad, 2008; Wettestad et al., 2012). The EU-ETS was even once described as actually 27 different ETS systems (Wettestad et al., 2012). Even for the UK, a ‘role-model’ as an ETS pioneer, the struggle of facing strong pressure from its industry to set a less stringent cap during the NAP drafting process is well documented and addressed (ENDS Report, 2004a and 2004b). So, generally, the UK became more and more frustrated with the lax NAPs prepared by other MS and the ‘free-riders’ of reduction efforts from other MS as well. This can partly explain why the UK showed a clear preferences for a more ‘harmonised EU-ETS with a real scarcity’ (ibid).

4.3. The Centralisation Stage (2008-2012): the Implementation of Revised EU-ETS in the UK

After the first phase of ‘learning-by-doing’, the second phase of EU-ETS implementation caught even more attention from not only the EU but also the MS, since it aligned with the first commitment period of the KP. Under this circumstance, the cap setting and the allowance allocation became even more vital, because they would play the key roles in determining whether the EU-ETS could effectively help the EU to meet its target under the KP of reducing GHG emissions by 8% from its 1990 level. Besides, the credits earned from the CDM and the JI started operating in 2008, and were allowed to be exchanged into the EUA market by the Linking Directive. All the surplus EUAs, CEUs and ERUs were made bankable to avoid the EUA market collapsing, to spur economic incentives and to provide certainty in green investment in the long run. Also, the economic downturn happened between 2008 and 2009, creating uncertainty, which presented a challenge for GHG emissions reduction. Against this background how to set a more stringent cap and how the EU-ETS will be fixed have become even more

crucial for all stakeholders since phase II.

4.3.1 The actions of implementing the EU-ETS in the Centralisation stage (2008-2012)

As shown in Table 15 on the next page, the UK registry stated that the total verified emissions for the UK in 2008 were 265 MtCO_{2e}, and the annual cap for Phase II was set at 245.6 MtCO_{2e}. Meanwhile, among all the available allowances in Phase II, 7% would go for auctioning, and 6.6% of them were reserved for new entrants (NERs). Therefore, a total of 217.6 MtCO_{2e} were allocated to incumbent ETS-sectors in 2008. According to the Defra's examination (2009:7), the verified GHG emissions of British ETS-sectors in 2008 were 265.0 MtCO_{2e}. So there was a shortfall of allowances in 2008 of 19.4 MtCO_{2e}.

Table 15. Selected details of the EU-ETS Phase II in the UK: (Units: Mt CO_{2e})

	2008	2009	2010	2011	2012
CAP	245.6 MtCO _{2e} *				
Total Installation	912 **	N/A	1136	N/A	N/A
Free EUA allocation (M: Million)	213.6 M	216.8 M	220.6 M	223.1 M	229.0 M
Auctioned EUAs (MtCO _{2e})	7% (17.2 MtCO _{2e} /yr)				
	4.0	25	35.8	30.7	27.3
NERs	6.6% (16.3 MtCO _{2e} /yr; 81.6 MtCO _{2e} for Phase II) Including 27.5 MtCO _{2e} for GQCHP				
Credits* (MtCO _{2e})	CERs: 4.6 ERUs:0.05	CERs:4.8 ERUs:0.2	CERs:7.84 ERUs:1.21	CERs:14.6 ERUs:1.34	CERs:25.0 ERUs:18.9
Emissions of combustion sector	80%	78%	81.6%	79%	80%
Verified emissions (MtCO _{2e})	265.06	231.9	237.3	220.9	231.1
Allocation – Verified emissions (MtCO _{2e})	-51.5	-16.89	-17.0	+2.27	-2.5

CAP –Verified Emissions (MtCO _{2e})	-19.46	+13.7	+8.3	+24.7	+14.5
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*Average annual allocation: 211.9 (total incumbents) + 16.3 (NER)+17.2 (Auctioned EUAs)= 245.6 MtCO_{2e}

** In which the combustion sectors accounted for 716 installations.

Source: Defra (2008; 2009); Environmental Agency (2011& 2012); EEA (2015)

From the emissions point of view, the incumbent ETS-sectors in the UK emitted 51.5 MtCO_{2e} more than their 2008 free allocated allowances (Defra, 2009). Compared with the verified emissions of 2007 (see Table 14 on page 125), the UK's emissions increased by 9 MtCO_{2e}. But Defra (2009) attributed this increase to: (a) the number of installations having increased by including the sectors previously opted out of the CCAs and the UK-ETS, which accounted for 9.2MtCO_{2e} (NAO, 2009) (b) the expanding scope of EU-ETS regulation. Then, in 2009 and in 2010, the verified emissions were 231.9 and 237.3 MtCO_{2e} respectively, which means that UK emissions increased by 5.5 MtCO_{2e}. After implementing the benchmark in Phase II, the UK decreased the volume of free allowances from the level in Phase I. In 2009, there were 220.6 million EUAs allocated for free, and 25 million EUAs (41% of total volume of allowances) were allocated by auction. Apart from this, the UK installations only used 24% of their permitted project credits limit in 2008, which was equal to 4.65 MtCO_{2e} (4.6 MtCO_{2e} CERs and 48,333t MtCO_{2e} EURs) and 5.0 MtCO_{2e} in 2009.

However, still from the Table 15, the use of these credits from the CDM /JI in the EU-ETS has increased dramatically since 2010 in the UK. Based on the data provided by the Environmental Agency (2011:8), the credits used in the UK were 5.05 million in 2009, and 9.05 million in 2010, i.e. 4 million more credits were used within one year. Although the Commission limited the use of these offsets to no more than 20% of total allowances, and the UK government set the limit at 8%, the willingness to use credits seemed to increase rapidly.

One of the reasons might be that, although the EUA price was too low to trigger more abatement measures, it still remained higher than these credits' market price (NAO, 2009, Martin et al. 2012). An industry survey in 2008 in the UK suggested that industrial sectors in the UK had higher willingness to use credits even though emissions would be lower than their EUA allocation (NAO, 2009:24).

Afterwards, according to data from the Community Independent Transaction Log (CITL), verified emissions for the UK in 2010 were 237.4 MtCO_{2e}, which was 8.2 MtCO_{2e} less than the UK annual cap of 245.6 MtCO_{2e}. The shortfall of EUAs was 16.8 million. UK installations received 92.9% of their allowances by free allocation, and had to purchase the remaining 7.1% from spot market or auction platforms.

Comparing the total verified emissions in 2008 with every other year in Phase II, emissions indeed decreased then, which, according to the arguments from several researchers, was largely a consequence of the economic recession during 2008-2009 (Martin et al., 2012; Convery and Redmond, 2013). The industry survey done by the National Audit Office (NAO) in 2008 also concluded that the decreased output was the major cause of GHG emissions being lower (NAO, 2009). Rayner and Jordan (2012) argued that emissions reduction in the UK was expected to occur in waste and industrial processing sectors. The analysis of Martin et al. (2012), which focused mainly on the reduction in the industrial sector, echoed this, and further suggested that the assessment of EU-ETS results should distinguish between the power and industrial sectors. In this way, the assessments can be used more precisely and meaningfully to ‘diagnose’ how to fix the EU-ETS. Thus, it seemed that the problem of emissions reduction remained in the energy sector in the first and also the second phase in the UK. The UK government continued to put most of the burden of reduction ‘efforts’ specifically on the large electricity producers (LEP) when drafting the NAP II, as the international competition faced by this sector was limited, and the sectors could pass on the abatement cost without the concern of carbon leakage (Defra, 2009: 10). In this situation, the combustion sector (including the LEP) was the only sector that remained short of EUAs in phase II. All the rest of the ETS-sectors had allowances equal to or above their actual emissions (Environmental Agency, 2011).

4.3.2 The reactions from implementing the EU-ETS in the Centralisation phase

Since the UK continued to place all the burden of GHG emissions reduction on the combustion sector, especially the LEP, in the centralised EU-ETS, the EUA allocation approach was then even more vital, as both the sectoral cap-setting and the allocation for the combustion sector can directly affect the emissions reductions. Only a stringent enough cap can create the scarcity of EUAs required to stimulate the regulated sectors’ actions on GHG reduction. From the allowance allocation perspective, the UK government decided to distribute the allowances to the power

energy sector by benchmark in Phase II, whilst the rest of the sectors remained allocated by means of ‘grandfathering’, i.e. by historic emissions data.

The main reason can be found in the NAO’s explanation (2009:25):

It [Benchmark] sends a signal to companies to improve their environmental performance, as those companies which are less efficient will be allocated fewer allowances relative to their need than their competitors to cover their emissions.

In other words, apart from the attempt to increase the EUA scarcity in the energy sector by applying the benchmark approach to allocate the allowances, the benchmark application was also expected to reinforce the policy-driven pressure on the less efficient energy installations to improve the efficiency of their production processes.

According to UK’s Phase II NAP, each installation in the LEP would receive its allowances via benchmark calculation and its own ‘relevant emissions’ and the sum of the ‘relevant emissions’ of all incumbent installations in this sector. The formula is as follows (Defra, 2007: 24):

$$\text{Total Phase II incumbent's allocation} \leftarrow \frac{\text{Incumbent's relevant emissions} \leftarrow}{\text{Sum of relevant emissions of all incumbents in sector} \leftarrow} \times \text{Total available allowances in sectors}$$

Apart from the NAO, the CCC also criticised free allocation, suggesting that it should be replaced by auctioning for the purposes: a) of increasing the stringency of EUAs, since the firms would only buy the volume of EUAs they needed; b) of reducing the cost and the time of negotiating the allocation process; c) of following the ‘polluter pays principle’. Under this circumstance, the UK government took the lead in launching the EUA auction in phase II, in which 87 million EUAs, and any surplus EUAs from the NERs and the surplus from the closures were auctioned. So, eventually, the UK government auctioned the maximum permitted amount of allowances (10%) in Phase II. This indicated the preferences and the belief that the UK held toward the EU-ETS, strongly supported by its experience of domestic emissions trading (i.e.UK-ETS).

Apart from the changes mentioned above, several issues needed to be addressed

from the first phase of implementation and to be avoided in Phase II, the first step of which was drafting the NAP II. In the RIA report in 2007, Defra clearly stated the aims and the importance of NAP II and highlighted that the distortions that arose in Phase I should be avoided. One of the essential lessons that were observed by the UK was the inconsistent EU-ETS implementation between MS, especially in connection with whether the installations should be opted-in or opted-out from the EU-ETS. These differences caused distortions in some sectors' competition within the EU common market. Not only major actors like the UK but lots of MS, including Germany, then started urging the EU to revise the EU-ETS with measures such as: working on the harmonisation of allocation rules under benchmarks and the regulations for new entrant reserves (NERs), building up the Monitoring, Reporting and Verification (MRV) Guidance and setting up clear standards to avoid carbon leakage (Carbon Trust, 2008).

From the sectoral level point of view, Energy UK (2012), which is composed of small, medium and large electricity generators, energy networks and suppliers of gas and electricity, sustained its support for the EU-ETS as the key policy driver of carbon reduction in the EU. However, since the CEP in 2008, the EU-ETS has been undermined and gradually overlapped by other policy instruments. Also, it is believed by Energy UK that the overlaps between EU-ETS and the measures designed for renewable energy and energy efficiency embodied in the CEP have further weakened the carbon price signal of the EU-ETS. Both the inconsistent carbon price signals emerging from the application of other policy instruments and the overlapped regulations may increase the regulated actors' costs in taking multiple measures to reduce GHG emissions.

On the other hand, EU-ETS implementation since the trial phase has also exerted a strong influence on the energy-intensive industrial sectors, especially in the UK. Since the trial phase of EU-ETS, the energy-intensive industrial sectors under the scope of EU-ETS have been actively involved in lobbying and consultation, gradually grouping up the associations to coordinate their activities with the purpose of becoming more influential at the EU level (Wettstad, 2009b). Examples are: the establishment of the High Level Group on Competitiveness, Energy and Environment (hereafter: High Level Group); the ETS review group in the ECCPs; and the final 'lobby frenzy' from late 2007 to the beginning of 2008. As the forerunner of emissions trading, the British energy-intensive industrial sectors played a crucial role during this process by initiating the idea of constructing the High Level Group (ibid). Compared to the energy sector,

which had long been represented by a strong organisation at EU level (i.e. Eurelectric), Wettestad (ibid: 12) argued that because of EU-ETS implementation, these energy-intensive industrial sectors had finally ‘woken up in the ETS class’. Therefore, the action that British energy-intensive industries, as the initiator, coordinated with the British government, one of the four MS representing the Council in the High Level Group, showed clear and strong ambition to upload the British national preferences and to influence EU-ETS revision.

The significance of establishing the High Level Group can be described as follows:

- (i) It formed an institutional turning point, which triggered more ETS-sectors to group up in the networking and agenda setting. Eventually these involvements increased the flexibility of the governance design, which was a sign that the EU-ETS was been more in line with development under MLG.
- (ii) From the overall ETS sectoral level, it then spelled out the new scenario that, in the EU-ETS revision and negotiation process, Eurelectric would no longer be the sole influential knowledge-provider to the Commission.
- (iii) With the High Level Group emphasising competitiveness and the disadvantage of facing increasing power prices resulting from the EU-ETS, the MS thereby had reason to take differentiated allocation approaches between sectors.

In general, whether from the government or regulated sectors perspective, after analysing these British style actions in response to EU-ETS implementation, it is safe to say that the UK retained its emphasis on and support for EU-ETS revision, whilst showing less interest in setting binding targets or further measures for renewable energy and energy efficiency at EU level.

4.4. The Reconciliation and Integration Stage: the Attempt to Fix the EU-ETS by the Carbon Price Floor (CPF)

4.4.1 Reactions to the 2030 Framework and the EU-ETS revision at EU level

After the Commission and the Parliament worked on the idea of ‘Backloading’ in 2013, stronger demands from MS for the Commission to conduct further structural reform to the EU-ETS emerged. Therefore, in the same year, the Commission released a Green Paper to collect comments and opinions on constructing the framework for 2030. The British government, therefore, re-clarified its position and preferences toward EU-ETS revision in the official response to it by stressing the flexibility and technology-neutral features (DECC, 2013). By addressing its preference for ‘flexibility’, the British government meant the ability of the EU-ETS to respond to uncertainties in the future and the differences between MS (ibid: 5). Also, the UK suggested that the EU should continue to provide global leadership on climate change by adopting an ambitious and EU-wide reduction target of 40% by 2030 (ibid: 3). However, the UK retained the preference against national binding targets for renewable energy and energy efficiency.

Regarding the EU-ETS, the UK government emphasised its preference for retaining the EU-ETS as a key policy for delivering further GHG emissions reduction in the 2030 Framework and as the cornerstone of the EU’s climate governance (ibid: 19). Therefore, the UK urged the Commission to make a legislative proposal to start the structural reform and to balance supply and demand by cancelling a sufficient amount of surplus EUAs. After the Commission sketched out the 2030 Framework in 2014, the UK further clarified its position of continuing support for the EU-ETS and argued that adopting further ‘technology specific’ instruments at the national level might increase costs to MS (DECC, 2014a:3). Then, in October in 2014, the British government addressed the need for the EU-ETS to implement a ‘strengthened’ Market Stability Reserve (MSR) (DECC, 2014b:3-4):

- A. The MSR should be implemented in 2017;
- B. The allowances reserved under the ‘Backloading’ should be addressed by cancellation, as they would create fluctuating prices and further increase uncertainty when released back to the market;
- C. To secure the investment of the EU-ETS, the threshold set by the MSR to return allowances should be set cautiously and only be triggered when the market is

under urgent pressure;

- D. The MSR should be reviewed periodically to ensure that its scope, criteria and threshold are adjusted appropriately to the circumstances of the EUA market.

4.4.2 The actions of taking the lead and fixing the EU-ETS at national level: the Carbon Price Floor (CPF)

In the autumn statement in 2011 the Coalition Government announced its plan to construct a ‘floor price’ for the carbon market, which was planned to come into force at the beginning of April 2013. There are at least two motivations that triggered the emergence of the Carbon Price Floor (CPF) in the UK. First, the overly low EUA price in the EU-ETS. The EUA price dropped by around 70 per cent between 2008 and 2009 as a result of the global economic recession. Then the UK Climate Committee had to revise the projected carbon price in 2020 from €55/tCO₂ to €20/ tCO₂, and estimated that the carbon price might be insufficient to support the UK transition to a low-carbon economy (OECD, 2011).

The second motivation would be that the UK had the biggest gap to fill between the renewable energy share in its energy consumption and the target (+15% before 2020) under the *EU Renewable Energy Directive*. How to stimulate renewable energy investment by a stronger and more meaningful carbon price had become more crucial in the UK. Therefore, under these two stressful circumstances, the Coalition government then conducted additional measures to strengthen the incentives not only to reach its renewable targets set by the EU but to convert itself to a low-carbon economy as well. But the basis is to stimulate the sustainable energy sector whilst keeping a careful watch on the potential impact from policy interventions on energy prices and the competitiveness of the economy.

As listed in Table 16, the Carbon Price Floor (CPF) aimed to charge a ‘top-up’ tax on the EUA price to be paid to the Treasury, and then the total levy would be used to incentivise low-carbon power generation in the UK. This target minimum price would only apply to the power generators subject to the EU-ETS in the UK. The carbon price floor would be updated on an annual basis and announced in the annual Budget statement.

Table 16. Carbon Price Floor (CPF) in the UK

Aims	<ul style="list-style-type: none"> ▪ To ‘top-up’ the EUA price. ▪ To incentivise low-carbon power generation techniques by providing support and certainty for the carbon price in the UK’s electricity generation.
Policy type	Mandatory taxation policy (Sandbag, 2015) Treasury policy (The Energy and Climate Change Committee, 2012)
Sectors	Energy generation sector.
Eligibility	<ul style="list-style-type: none"> ▪ Fossil-fuel-based electricity generators; ▪ Combined heat and power (CHP) operators; ▪ Auto-generators; ▪ Electricity utilities.
Timeframe	Started operating on 1 st April, 2013
Revenues	Raised almost £1bn for the Treasury in 2013, and estimated that the CPF could raise £2bn a year by 2015 (Greenpeace, 2013).
Meanings	<ul style="list-style-type: none"> ▪ EU-ETS: undermining confidence in the EU-ETS’ market mechanism. ▪ The UK: climate policy-making started being intervened in by the Treasury; conflicts between authorities. ▪ Other MS: intra-EU leakage.

Source: The Energy and Climate Change Committee, 2012; Advani et al., 2013.

The CPF trajectory started from £16/tCO₂ in 2013; £30/tCO₂ in 2020 and increases to £70/tCO₂ in 2030 (2009 price) (DECC, 2009; Advani et al., 2013:54). Afterwards, to bridge the gap between the CPF set by the UK government and the EUA price in the EU-ETS, the Carbon Price Support Rate (CPSR) of the CCL and the fuel duty for oils are levied on fossil fuels used in electricity generation. The components that are crucially used to calculate the CPSR are: i) the CPF set for specific year; ii) the 2-year-ahead EUA future price. So far, the CPSR was set at £4.94/tCO₂ for 2013-2014 and £9.55/tCO₂ for 2014-2015 (Energy and Climate Change Committee, 2012; Advani et al., 2013). According to the CPF reform released in March 2014, the UK government fixed the price at £18/tCO₂ from 1st April 2016 to 31st March 2020 (HM Revenue & Customs, 2014). So the lower the EUA price is the higher the ‘top-up’ tax that emitters (mainly power generation sector) in the UK must pay. This is also the reason why there are concerns that the CPF may increase the energy prices passed through to consumers

and also threaten economic competitiveness, which could be reflected in business relocation.

Another major concern would be the environmental impact that the CPF could have, although the policy is aimed at cutting coal use in the energy mix and indirectly reducing carbon intensity within the UK. Since the CPF came into force in 2013, the industry (mainly power sectors) and even ENGOs (Greenpeace UK for example) have remained skeptical about CPF's incentive to cut coal use in the UK (Kahya, 2013). According to the Budget of 2013, the levy was predicted to raise almost £1 billion for the Treasury in 2013, rising to around £2 billion by 2015. The UK government also announced that certain energy-intensive industrial sectors could be compensated for their increased power prices under the CPF regulation, which will be subject to EU state aid clearance, while the rest of levy from the CPF is set to remain in the Treasury (BEIS, 2012). Therefore, the non-profit organisation Sandbag (2014:5) commented that the CPF could be described as a financial hedge for the Treasury in light of the proposals contained in the [UK's] Electricity Market Reform Package.

But can the CPF work for fixing the carbon price signal within the EU-ETS at national level? Following the latest comments on the CPF, though the real environmental benefit still remains uncertain, it is relatively clear that the projected effectiveness proclaimed by stakeholders is against the initial expectations and intentions of the government. First of all, on environmental effectiveness, i) CPF was designed to 'correct' the overly low carbon price and to help the UK reduce GHG emissions. But, since the cap of the EU-ETS is and will be decided at EU level, any additional emissions reduction in the UK will not reduce overall emissions. It only means that there will be more EUAs available in other MS with less need to reduce emissions. ii) If the 'gap' between the CPF and the EUA price became large, this would increase the overall cost of carbon dioxide emissions reduction in the UK. iii) The higher carbon price applied in the UK, to some extent, would become a subsidy to encourage higher fossil fuel emissions in other MS. This then would result in carbon leakage intra-EU. vi) The CPF will increase certain energy generators' windfall by about £1 billion per year without any additional emissions reduction but simply because the energy generation process does not need the allowances, as in the case of nuclear energy (The Energy and Climate Change Committee, 2012).

Secondly, from the economic effectiveness point of view, i) the CPF will directly increase the electricity price by adding the tax price to every unit of carbon dioxide

emissions in the electricity generation process. On the one hand, this will threaten the economy. On the other hand, it will increase the incentives for the UK to import electricity with lower cost from the continent, which will decrease the UK's security of energy supply and lead to fuel poverty. ii) The higher carbon price from the application of the CPF will potentially harm the industry's competitiveness. iii) Greenpeace (2013) estimated that the CPF could bring almost £1bn into the Treasury in 2013, and forecast that CPF could raise £2 billion a year by 2015, all going directly into the Treasury's coffers. And the real environmental benefit resulting from this revenue remains questionable.

Thirdly, from the environmental effectiveness to the EU-ETS point of view, i) since the overall cap and number of EUAs issued are decided beforehand at the EU level, increasing carbon reductions at the regional level will reduce the overall demand for allowances and decrease the EU-wide carbon price. ii) The distorted and decreased demand for EUAs resulting from the CPF elsewhere in the EU could make the total EUA surplus issue worse. iii) Apart from reducing the EU-ETS' overall economic and environmental effectiveness, the CPF actually undermines confidence in the EU-ETS market mechanism as the core pillar of the EU's emissions reduction policy.

Fourthly, with the concerns of political effectiveness, perhaps the CPF could be considered as a pilot test for the UK in its pursuit of leadership in the EU's carbon market in the next stage of EU-ETS revision. However, it may have to risk its industrial competitiveness and economic future, which is definitely not a bargain. As a mandatory treasury policy, the CPF actually could be seen as a signal and an attempt at wider involvement when designing or fixing climate policy, which can be seen as a synergy between the EU-ETS and the national climate plans of the UK. However, before the CPF can really push policy integration under tackling climate change at the national level, it has already created conflicts among central government, industry, devolved authorities and departments.

Thus, following the analysis of the potential effectiveness of the CPF from different aspects, it is safe to conclude that considering the centralised EU-ETS policy design and the volatility of the carbon price under the EU-ETS, some mechanism to fix or make more 'coherent' the carbon price signal should be constructed at the EU level. Otherwise, any unilateral action taken by MS will not only cause intra-EU carbon leakage but also damage both the economic and environmental effectiveness of the EU-ETS.

Conclusion

To sum up, this chapter intended to identify how EU-ETS implementation and revision affected the UK's preferences and initial position on EU-ETS re-formulation. As diagnosed through its GHG emissions and energy-economic structure, we can conclude that both the UK's position and the problematic issues in implementing the EU-ETS have remained unchanged. However, the UK shows a clear tendency to strengthen the synergies between its national climate governance and the EU's climate governance by continually highlighting its preference for the EU-ETS and its pioneer status in it.

Although the general objective that the UK holds is sustained, several signs show that EU-ETS implementation has affected the preferences of stakeholders in the UK's climate governance. In the UK, the major reduction burden is put on the energy sector, so the success (or failure) of GHG emissions reduction remains dependent on CO₂ emissions reduction in the energy sector, which is directly linked to its electricity generation. This echoed the national preference, i.e. the concern of industrial competitiveness (both globally and regionally) that was formed and shaped by several contextual factors as follows.

Firstly, the 'structural change' resulting from the 'dash for gas' formed a positive motivation for the British energy sector to be more open-minded about structural reform and GHG emissions reduction. Secondly, the tradition of applying market-based policy instruments formed the relatively consistent willingness of both energy and energy-intensive industrial sectors to be opted-in to the EU-ETS. Besides, thanks to the traditional consultation-based feature and the increase of special devolved authorities to bridge the central and sub-national governments, the 'asymmetrical energy-economic interests' were minimised in the UK case of EU-ETS implementation. This can generally explain why from the Europeanisation stage to the Centralisation stage, the UK's national climate governance has been consciously keeping in a synergy with the EU. In other words, although British inherent contextual factors were vital in forming the UK's initial position and preferences with respect to the EU-ETS, both the UK government and its energy-intensive industrial sectors learned quickly from EU-ETS implementation how to influence the EU-ETS revision.

The third one is that the national energy-economic structure has long been affected by the influential industry lobby. In the UK, both the energy sector and energy-intensive

industrial sectors have shown the same pro-active support for the EU-ETS but for different reasons and in different ways. As demonstrated in this chapter, although the major GHG reduction burden has been put on the energy sector since the first NAP, the energy-intensive industrial sectors have actively participated not only at state level but also at EU level. It seems that both from the governance and practice points of view, the UK's reactions and actions toward the EU-ETS have tended to follow the MLG model. Both the policy-makers and regulated actors have shown clear support for the continuation of the EU-ETS, which fits with its 'liberalist' tradition and preference for 'market-based', 'flexible' and 'technology-neutral' features. And from government statements and actions, it is clear that the industry lobby and consultation from the national energy-economic structure have successfully integrated their voices and preferences into the British government's preferences. Therefore, during EU-ETS implementation, to some extent, these devolved authorities between central government and sub-national authorities and the industry's active participation progressively formed a more flexible design in British climate governance. In doing so the issue of '*asymmetrical energy-economic interests*' in its energy-economic structure was greatly reduced in the UK.

The UK has long retained and shown a clear preference for a more harmonised and consistent EU-ETS under a 'technology-neutral' and 'one target only' approach to climate-mix. It seems clear that the actions of the UK at each stage were for the purpose of fixing EU-ETS to stimulate (recover) the 'economic incentives' that this market-based instrument theoretically has. This approach has significantly differed from some MS (e.g. Germany) with their intent of reducing GHG emissions by promoting more harmonised and binding renewable energy policies and targets (Evans, 2014). Therefore, to an extent, it is safe to conclude that in order to secure the economic incentives of the EU-ETS, the crucial focus of the UK in EU-ETS revision is on 'fixing' the overly low carbon price. So it was not surprising to see the UK take the lead in applying the national Carbon Price Support mechanism to stimulate a more meaningful carbon price signal in the UK in 2013.

What the UK has done still passes a strong and clear message of its national preference and position on EU-ETS revision at EU level, though the national Carbon Price Support mechanism has remained unclear so far. It highlights that not only does the quantity of EUAs on the EU-ETS' market need to be monitored, but the quality of carbon price signal to bridge the carbon market and green investment in the EU needs to be reinforced as well. Therefore, the trial of setting the CPF in the domestic arena

can be seen as another vital attempt from the UK to play the ‘pioneer’ role of leading the EU-ETS revision. As Froggatt (2015) from the UK Energy Research Centre concluded in research comparing the European Climate and Energy Package 2020 and the 2030 Framework, the core problem that has been continually questioned as bringing further risk to certain ETS-sectors is the resistance to setting a floor to the EUA price at EU level. It is safe to say that this argument, on the one hand, reflects the UK’s belief in its experience from the UK-ETS and the preferences reinforced during EU-ETS implementation. On the other hand, it also reflects the attempt of the UK to strengthen the synergies between national climate governance and the EU’s climate policy revision by playing the role of the model. Under these circumstances, in the case of operating and revising EU-ETS, the UK can be considered to remain an initiator and also a pioneer in the EU.

Chapter 5 Case Study: Germany

- *From an EU-ETS ‘skeptical laggard’ to a proactive pioneer in the EU?*

Introduction

Germany has been known mainly as a policy-taker and also as a *laggard* with a relatively skeptical attitude toward the EU-ETS (Watanabe and Mez, 2004; Wurzel et al, 2013). As mentioned in Chapter 2 (page 30), Germany is one of a few MS that supported a community-wide eco-tax in the 1990s, whilst the preference for emissions trading, led by the UK and the Commission, gained the upper hand with the help of the KP negotiation (Wurzel et al, 2013; Boasson and Wettstad, 2013). After the Commission Directive 2003/87/EC was adopted in 2003, the German government also faced a quite challenging situation when implementing the EU-ETS in 2005 (OECD, 2012a; 2012b; IEA, 2013). Apart from the challenge of how to fit the EU-ETS horizontally and vertically into the existing climate policy mix in the domestic sphere, obstacles continually appeared in the revision and operation of the EU-ETS, and have remained a major influence on Germany sustaining its skeptical attitude and laggard position. Also, with the preferences of securing its advanced status in green technology and environmental goods and services (EGS) market globally, how to implement and influence the EU-ETS revision is also crucial to both German industries and government.

At regional level, Germany’s attitude and the further implementation of the EU-ETS can also have a guiding and learning effect on the rest of the EU’s MS. This may also be important in strengthening Germany’s leading role within the EU. From the EU institutions’ point of view, considering Germany’s political power and its large share of total GHG emissions in the EU, having support and compliance from Germany for their climate governance can strengthen the EU’s legitimacy and ability to persuade the rest of the MS to follow. So, given Germany’s prominent position within the EU and its ambition to pursue leadership in the climate issue (BMUB, 2014:9),²⁹ Germany’s

²⁹ In ‘The German Government’s Climate Action Programme 2020’ that adopted by the Cabinet on 3rd December 2014 and published by Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety (BMUB), German government clearly pointed out: ‘Germany can, and must, play a key role internationally and must demonstrate that taking climate action in an industrialised country does work and, in fact, is crucial for any economy that wants to be competitive in the 21st century.’

actions and reactions in relation to such an expanding and yet mature carbon pricing system, the EU-ETS, deserve close attention and further analysis.

Therefore, this chapter will use Germany as the second case study. The structure is based on the analytical structure set out in Chapter 3 (Page 89). Thus, it is identical to the structure used in the previous case study. The first section will identify and define the issue of GHG emissions in Germany by tracing its economic structure and the historical GHG emissions trend in the energy mix. Then this chapter will turn to focus on Germany's reactions to GHG emissions reduction in its climate governance. Before starting the assessment of EU-ETS implementation in the Europeanisation stage (2002-2007) in Germany, several crucial components of German climate governance and policy-making are demonstrated in the first sub-section. These include: (i) the actors; (ii) features of the German policy network; (iii) the policy instruments; and (iv) climate commitments pledged by the German government. In the second sub-section, the implementation of EU-ETS phase I in Germany is addressed.

Thirdly, in the section on the Centralisation stage (2008-2012) of the EU-ETS, the emphasis is put on investigating Germany's actions and reactions to the revised EU-ETS under the centralisation trend. Fourthly, in the Reconciliation and integration stage (2013-current), the discussion turns to what national effort(s) made by Germany can be seen as a response to synergy (or conflict) triggered by EU-ETS implementation. Lastly, a brief summary will be provided to explain how EU-ETS implementation has influenced Germany to change from being a laggard to becoming a pro-active actor in EU-ETS revision at EU level. This section also sums up other actions on the part of Germany that were triggered by conflicts and synergies arising from the implementation of the EU-ETS.

5.1. Problem Identification and Definition: GHG emissions in Germany

Germany was initially and has long been known as a skeptical laggard of the EU-ETS (Watanabe and Mez, 2004; Wettstad, et al., 2012; Wurzel et al, 2013; Wettstad, 2014). Also, with regard to its federal structure, which is similar to type one MLG, continuity of policy instrument selection has been sustained between different German cabinets since the 1990s. This is the reason why scholars like Wurzel (et al, 2013) and Boasson and Wettstad (2013) argued that Germany preferred the community-wide eco-tax and remained relatively skeptical about emissions trading in the 1990s. Wettstad, et al. (2012) indicated that under its federal structure, the German states

possess relatively weak authority with multiple veto points and players. On the one hand, these lead to a special partnership growing among central government, states and those crucial private interests in the governance of social welfare. Wettestad, et al. argued that this partnership reinforced Germany's skeptical attitude toward EU-ETS which arose from those major private interests. On the other hand, thus, it seems that some features of the 'German Model' (Modell Deutschland in German) of economy (social partnership³⁰ and social market economy³¹) and political system (federal structure) have not only played crucial roles in Germany's policy-making for climate governance but also reinforced the continuity and steadiness of the climate policy mix.

Another contextual factor that is frequently discussed is the lion's share of GHG emissions from Germany's electricity and heat production, which can be attributed to the over 60% of power generation from fossil fuels in its energy mix. These contextual factors, on the one hand, increased Germany's power during climate policy-making for GHG emissions reduction in the EU. On the other hand, they also reinforced the need for cooperation from the actors and private interests in the energy sector, which made them more influential during the process of drafting NAPs in the EU-ETS.

Therefore, from the literature and previous empirical studies, the main contextual factors that are likely to affect EU-ETS implementation are: federal structure; German model of economy composed of social partnership; high carbon intensity energy mix from over 60% fossil fuels use. Although it is clear that these factors have played the vital roles in formulating the German national preferences during the process of negotiating and implementing the EU-ETS, how EU-ETS implementation has gradually affected these contextual factors to reshape Germany's preferences remains unclear. Thus, this chapter is designed to re-investigate how Germany has implemented the EU-ETS and how its contextual factors interact with its EU-ETS implementation, which may provide a clearer explanation of why Germany has gradually changed its position on the EU-ETS.

³⁰ 'Social partnership' means the legally defined and the cross-level structure, which is set for organising interests, negotiation and information exchange. So the social partnership is interdependent and mutually reinforcing. Details can be found in Turner (1993) work.

³¹ Social market economy is also called 'Soziale Marktwirtschaft' in German.

5.1.1. The Economic Structure and the historical GHG emissions trend in Germany

Being the largest national economy in Europe, the 4th largest by nominal GDP in the world and 5th by GDP (PPP) in 2015, in addition to being a founding member of the EU, the importance and the power (both economically and politically) of Germany is undeniable. But how Germany has also played an essential role in the EU's climate governance and EU-ETS development, and whether its role is related to its economy, are the questions that need answering. Before identifying the historical GHG emissions trend in Germany, a rough understanding of how this relates to its economic structure is necessary.

Looking into the total GDP shared by sectors in Germany in 2016, the service sector contributed about 68.9% of the total GDP, while the production sector accounted for 25.7%, the construction sector 4.8% and agriculture 0.6% (Statista, 2017). Apart from the 'German Model', another major characteristic of the German economy is that it has the largest manufacturing economy in the Europe and is constructed from 'small and medium enterprises' (known as 'Mittelstand Model'). As a result of that, it is less likely that the German economy might be dramatically affected by a financial downturn. Despite the small changes in the economic growth rate over the recent years, Germany has remained the economic powerhouse of Europe, and it is still the strongest economy in the EU by far. Still another characteristic of the German economy is the fast growing green technology and environmental goods and services (EGS) sector. According to BMUB calculations in 2012, Germany was among the largest producers of EGS with the second largest market share in global trade of climate protection, where Germany owned approximately 12% of the total market.

Having given a basic idea of Germany's economic structure and characteristics, it is time to identify the linkage between the German economic structure and its historical GHG emissions trend. According to an assessment by the OECD in 2012, Germany had already reduced its GHG emissions by 24% in 2010 (comparing to the 1990 level) through merely domestic abatement measures. This exceeds its commitment under the EU's BSA.³² Meanwhile, Germany also successfully decoupled the total primary

³² Under the EU Burden Sharing Agreement (BSA), Germany committed to reduce its average GHG emissions by 21% below the 1990 level over the Kyoto Protocol commitment period (OECD, 2012:110).

energy supply and its economic growth, which is a remarkable achievement taking its GHG reduction and productivity into consideration (Mez, 2012). Nevertheless, the striking thing is that Germany is still the top GHG emitter in the EU and the third largest emitter in the IEA even after achieving those remarkable results mentioned before (IEA, 2013).

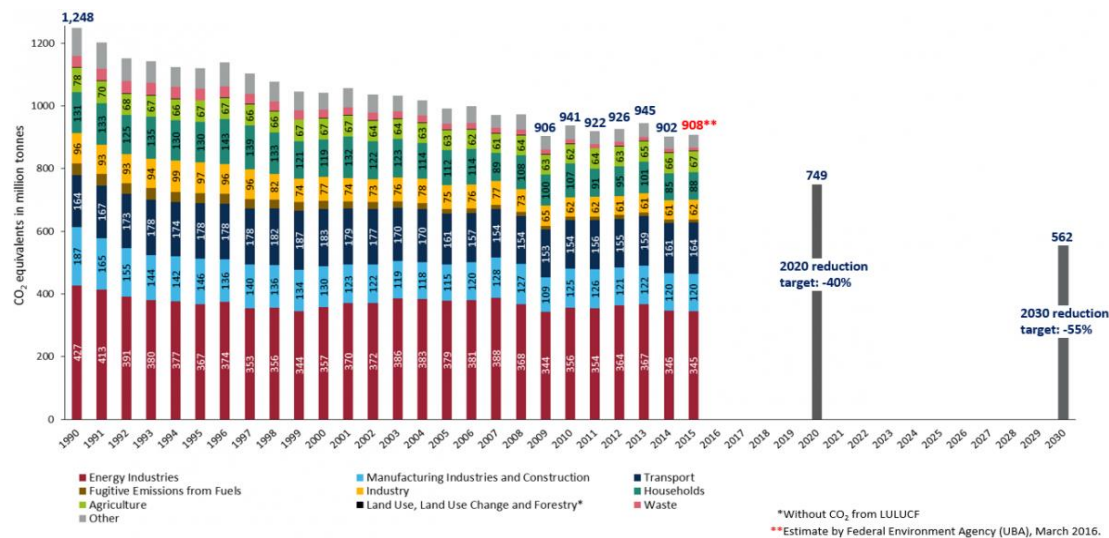
Some researchers have tried to explain this contradictory phenomenon by highlighting the crucial help from the one-off “wall-fall profits” on GHG reduction in 1990, and arguing that there was limited effect from other GHG reduction instruments in Germany (Scheich, 2001; Eichhammer et al., 2001; Hirono and Schröder, 2004; Jänicke, 2012; Klein, 2012). The explanation of the so-called wall-fall profit is that, after reunification in 1990, Germany made significant GHG reductions simply by shutting down many inefficient and dirty industries and installations in the former East Germany. German reunification helped Germany to achieve 18.3% GHG emissions reduction from 1990 levels by 2001 (Hirono and Schröder, 2004).

Other researchers hold different opinions, pointing out that in the late 1980s Germany started a series of energy policy reforms and gradually added to its national climate commitments by developing renewable energy (Watanabe and Mez, 2004; Jost and Jacob, 2004; Weidner and Mez, 2008; Mez, 2012). Besides, both Watanabe and Mez (2004) and Jänicke (2012) argued that GHG emissions reduction since 1998 could be accounted for by Germany’s dedication to national climate governance led by the ‘Red-Green’ government (1998-2005). In addition, the reports of *Progress towards achieving the Kyoto objectives* and *Progress towards achieving the Kyoto and EU2020 Objectives* (European Commissions, European Parliament and European Council, 2010; 2013) and the *Annual European Union greenhouse gas inventory 1990-2012 and inventory report 2014* (EEA, 2014) affirmed that the German government’s contribution to reducing GHG emissions can be attributed to efficiency improvements in power and heating plants and the increasing use of combined heat and power (CHP).

According to the UNFCCC’s National Greenhouse Gas Inventory data for the period 1990-2009 (UBA, 2011), Germany’s annual GHG emissions dropped from 1,248 MtCO₂e to 920 Mt CO₂e, which was a reduction of 26.3% from 1990 levels. Given the claim that GHG emissions dropped by 18.3% from 1990 levels in 2001 from the ‘wall-fall benefits’ without applying additional climate policies, it seems that only about 8-9% GHG reduction was made from 2002 to 2009. Judging by this figure, it is not surprising that Karapin (2012) suggests that GHG reduction in Germany was merely

an aggregate result from mixing several relative successes and failures. However, according to the OECD's calculation (2012), the steadily declining energy intensity in both primary energy supply and final energy consumption while the German economy was growing between 2001 and 2008 actually helped the decrease in GHG emissions by about 12%. So, considering the economic modernisation and investment in the five new *Länder* from the former East Germany and the development of climate policies at the federal level, the GHG reduction efforts of the German government cannot be ignored and the GHG reduction should not be dismissed as one-off 'wall-fall profits' under an aggregate result.

When it comes to the policies for tackling climate change and reducing GHG emissions, as with other MS in the EU, the climate policy and reduction targets at the EU level have significantly affected Germany's climate policy-making, especially the selection of policy instruments. For a country like Germany, traditionally based on a command-and-control approach and voluntary instruments with certain financial supporting mechanisms, the EU climate governance largely re-directed German climate policy to a quite opposite market-based approach. Before further investigating what climate policy mix the German government used to eliminate GHG emissions and how it reacted to the policies/directives from the EU, a closer look will be taken at the GHG emissions issue. Tracking historical GHG emissions in Germany from 1990 to 2015 (UBA, 2016; Appunn, 2016) in Graph 18, we see that German GHG emissions have indeed been on a declining trend since 1990. It seems that the 'wall-fall profits' did help German GHG reduction from the advantageous starting point of 1990 (Schleich, 2001; Eichhammer et al., 2001; Hirono and Schröder, 2004; Jänicke, 2012; Klein, 2012). However, after the 'wall-fall profits', according to OECD's estimation (2012), a 12 per cent reduction was noted between 2000 and 2009, which may be the result of some manufacturing sectors relocating and outsourcing to new MS. Still, as can be seen in Graph 18, GHG emissions sustained a downward trend from 1076MtCO_{2e} in 1998 to 995 MtCO_{2e} in 2005. This falling trend supports the argument from both Watanabe and Mez (2004) and Jänicke (2012) that the input of the Red-Green government (1998-2005) really cannot be ignored. This will be further analysed in the next section.

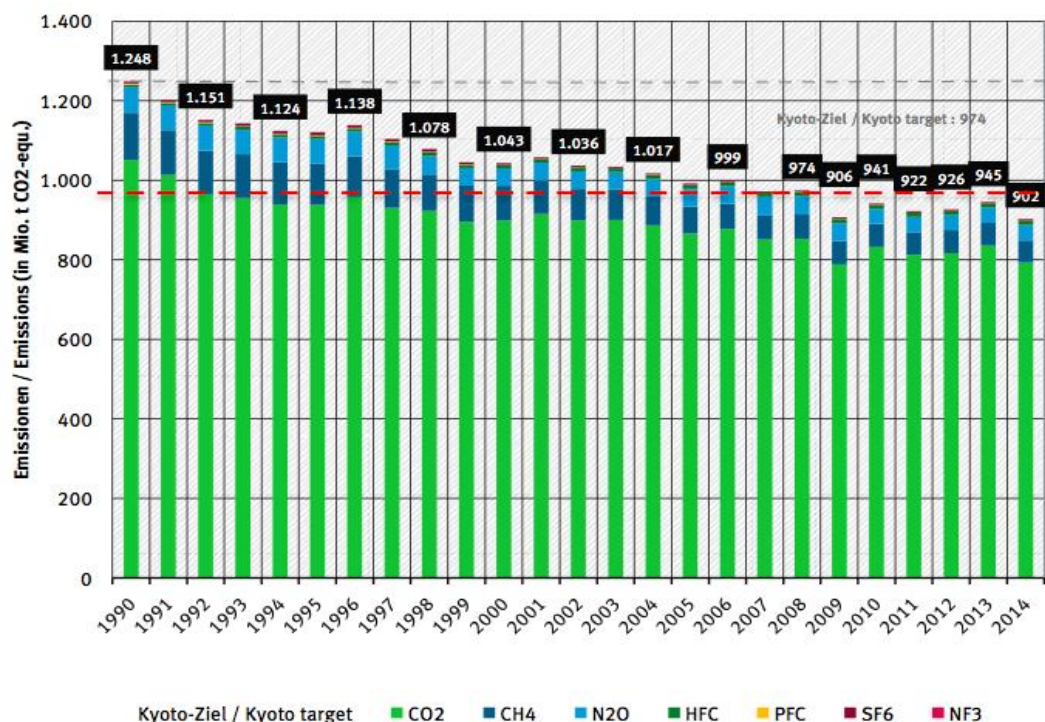


Graph 18. The total GHG emissions in Germany by sectors, 1990-2015 (exclude the emissions from LULUCF³³). Source: the Federal Environment Agency (UBA), 2016; Appunn, 2016

However, there is a sudden increase between 2005 and 2006, which was the first year of Phase I in the EU-ETS. It seems that the expected environmental effectiveness, i.e. GHG emissions reduction, of implementing EU-ETS in Germany did not happen as the economic textbook said it should. This is striking but what must also be noted is that, although German GHG emissions had a sudden increase in 2006, Germany accomplished its climate commitment under the KP³⁴ two years later, whilst the KP compliance period was just starting. As shown in Graph 19, German GHG emissions in 2008 were exactly as high as its Kyoto target, 974 MtCO₂e. Compared with the 1990 level, German GHG emissions had decreased by 22.2% or roughly 280 million tons. Afterwards, the financial crisis broke out, which is reflected in GHG emissions dropping from 974 MtCO₂e in 2008 to 906 MtCO₂e in 2009. By then, overall GHG emissions in Germany had decreased by 27.4% from the 1990 level (1248 MtCO₂e, as in both Graph 18 & 19).

³³ LULUCF: 'Land use, land-use change and forestry', which is defined by the UNFCCC Secretariat as "A greenhouse gas inventory sector that covers emissions and removals of greenhouse gases resulting from direct human-induced land use, land-use change and forestry activities."

³⁴ Germany pledged itself to share the 21% GHG reduction commitment under the Kyoto Protocol (1995) and the EU Burden Sharing Agreement (1998). More details about the German climate commitments will be discussed in the section 5.2.1 Germany's reaction and action toward climate change.



Graph 19. The historical GHG emissions trend in Germany by gases, 1990-2014.

Source: National Inventory Report for the German Greenhouse Gas Inventory 1990-2014 (UBA, 2016:67)

However, still referring to Graph 18, GHG emissions rose again in 2012, to 926 MtCO_{2e}, and to 945 MtCO_{2e} in 2013. Comparing to the GHG emissions amount in 2011 (922Mt CO_{2e}), the emissions increased by approximately 11 MtCO_{2e} more than in 2013. Combining Graphs 18 and 19, this sudden increase can be attributed to increasing GHG emissions in the energy sector, which rose from 354 MtCO_{2e} in 2011 to 367 MtCO_{2e} in 2013 (also in Graph 18). Referring to Graph 19, more specifically, the increase resulted from climbing CO₂ emissions, with a rise of 1.5 per cent. Then there was a 30 million tonnes of CO₂ emissions drop in 2014. According to the analysis done by German think-tank Agora Energiewende, this was due to the mild winter in the beginning of the year, which led to lower energy consumption in the power sector and decreased CO₂ emissions (Appunn, 2015). According to the latest calculation and projection published by UBA (2016), Germany's official GHG emissions increased again by 6 Mt CO_{2e} or 0.7 per cent in 2015 and reached 908 Mt CO_{2e} (UBA, 2016).

From the emissions source point of view (as shown in the Graph 18), although the overall GHG emissions trend remains generally downward from 1990 to 2015, the emphasis should be put on the GHG emissions from the energy sector, which remained the largest share of GHG emissions. According to the UBA analysis (2014), GHG emissions in the German energy sector declined by roughly 18 per cent from 1990 to

2012. The IEA (2013) argued that the major driver contributing to GHG emissions reduction in Germany was the energy sector, which reduced emissions by 28.6 MtCO_{2e}. However, as the figures provided and displayed in Graph 18 show, GHG emissions from the energy sector have long been a big share of each year's total, ranging from 34 per cent to 38 per cent. It seems that although the energy sector has achieved the largest reductions, the emissions in this sector have decreased more slowly than total emissions. In other words, compared with the other sectors, the energy sector has reduced emissions proportionally much less. Klein (2012:6) further analysed the figures in 2009 and indicated that the major reason that GHG emissions are concentrated in the German energy sector is electricity and heat production. If GHG emissions from the electricity and heat production were excluded from comparative figures, Germany would become the third lowest emitter in the OECD. This also partly explains why Germany remains the top GHG emitter in the EU, even after it has successfully broken the link between its economic growth and GHG emissions (OECD, 2012; Klein, 2012; Morris and Pehnt, 2012: 2-Grpah).

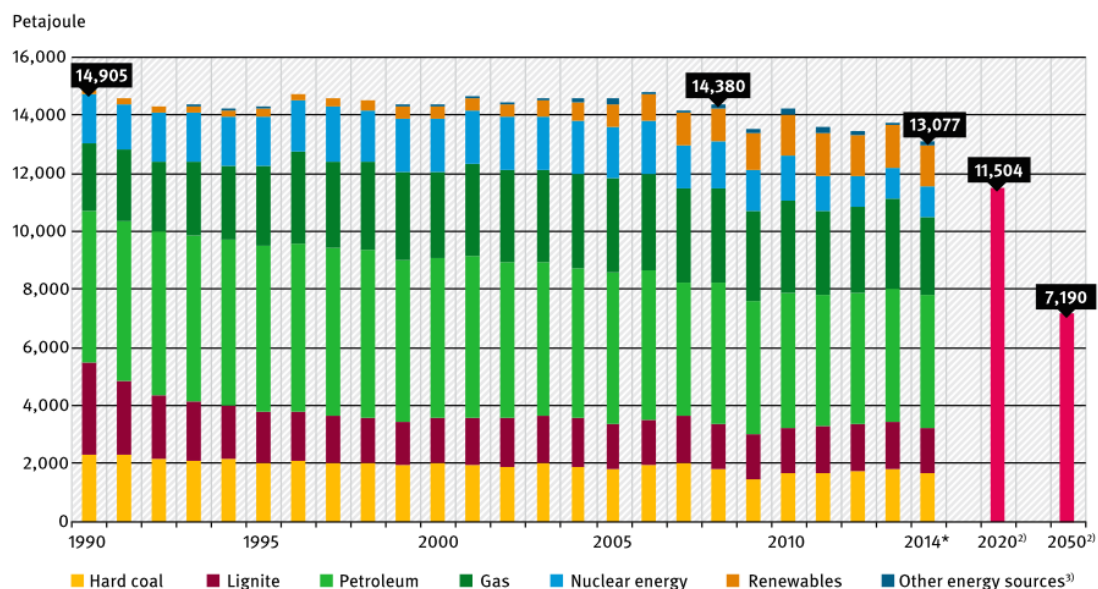
Therefore, a few warnings and doubts that Germany might not be able to meet its next carbon targets by 2020 have emerged (McGarrity, 2014). The Vice-President of the Federal Environment Agency (UBA, 2014:1), Thomas Holzmann, also stated his concerns to the press: ' [...] If it [the increasing GHG emissions] continues, we can hardly expect to achieve the Federal Government's climate protection goal for 2020[...]' . According to the UBA's calculation, German GHG emissions have now been reduced by 23.8 per cent since 1990. It appears that in order to achieve the climate target of 40 per cent by 2020, German GHG emissions have to be reduced by roughly 17 per cent within 5 years (Appunn, 2016). However, UBA (2014) has already projected that the measures for reducing German GHG emissions adopted and implemented so far will lead to only about 33 to 34 per cent reduction by 2020 only. In other words, the German government has admitted that there is a 'climate gap': a shortfall of 7 per cent on the current trajectory to meet climate target by 2020 (Appunn, 2016).

To sum up, there are at least two things that should be noted: firstly, the German energy sector is responsible for the largest share of Germany's GHG emissions, especially the increases in recent years (2011-2013). This indicates the need to further investigate the energy mix before assessing how the EU-ETS has been applied and implemented in Germany. Another need is to investigate what might have gone wrong when Germany implemented both national climate policy and the EU's major GHG

reduction instrument, the EU-ETS, as its GHG emissions showed an increasing trend before the end of phase II of EU-ETS implementation. Secondly, within the big share of GHG emitted by the energy sector, GHG emissions from electricity and heat production is the core issue. It seems that either the EU's or Germany's national climate protection measures are not sufficient for Germany to reach the climate targets.

5.1.2. The Linkage between GHG emissions and energy mix in Germany

The best way to analyse why the German energy sector retains the lion's share of GHG emissions is to investigate its energy mix. Graph 20 shows the historical primary energy consumption by source from 1990 to 2015. Several points can be found and are noteworthy. Firstly, lignite use decreased dramatically until 2000, to half the 1990 level, while hard coal consumption remained relatively steady from 1990 to 2014. Even after the first phase of EU-ETS implementation, the share of coal use remained similar. The relatively significant drop appeared to happen during the economic recession between 2008 and 2009. After experiencing a slight increase from the economic recovery starting from 2010, coal use started to drop again in 2013. Natural gas use is also worth further analysis. In 2005, when the EU-ETS had just started, natural gas use had increased by roughly 10% over natural gas use in 1990. Within 3 years, it increased by another 5%. Since then the use of natural gas in Germany has started dropping.



¹⁾ Calculations based on the efficiency approach

²⁾ The objectives of the Federal Government's energy concept are: reducing primary energy consumption by 20% by 2020 and by 50% by 2050 (baseline year: 2008)

³⁾ Other energy sources: mine gas, non-renewable waste and waste heat as well as electricity exchange balance

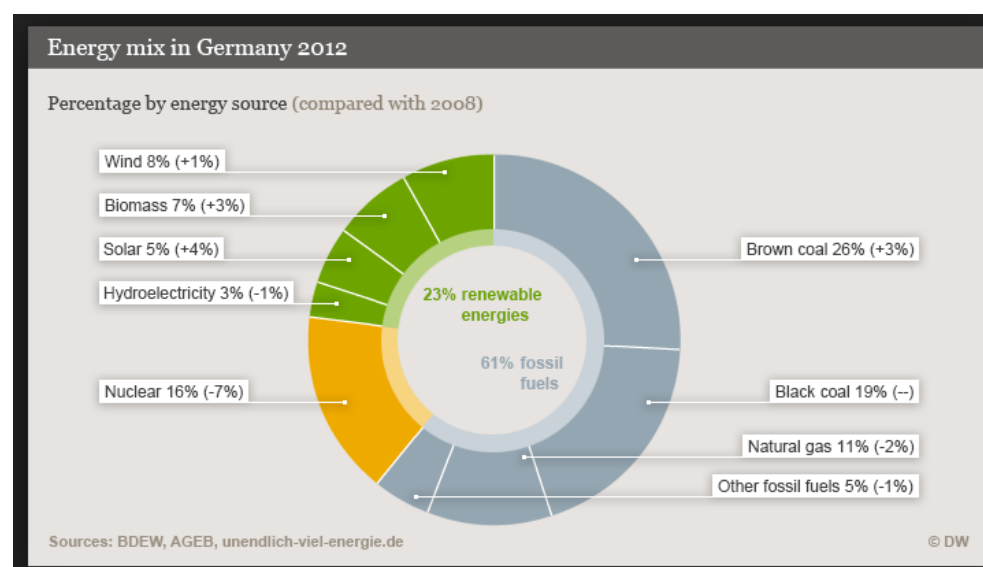
* 2014: Preliminary figures

Graph 20. Primary energy consumption by sources, 1990-2015.

Graph source: Data on the Environment 2015 (UBA, 2016: 26); Data: AGEb, Energy Balance Evaluation Tables for the Federal Republic of Germany 1990-2013, as of 09/2014 and Primary Energy Consumption in the Federal Republic of Germany 2013-2014, as of 03/2015.

Secondly, since 2000, the share of renewable energy has increased massively, which is generally believed to be attributable to the Red-Green coalition Government adopting new energy policies (e.g. RRG legislation and amendments) with major emphasis on developing renewable energy (ibid). As a result of that, following the government's estimation (UBA, 2015:27), the share of renewable energy in German primary energy consumption rose from 1.3% in 1990 to 11.1% in 2014 (Graph 20). However, as can be found in Graph 20, the proportion of hard coal in energy consumption has dropped relatively little since 1990.

Thirdly, from the nuclear energy point of view, the CDU/CSU/FDP coalition government (1987-1998) once intended to extend the life of nuclear power plants. However, the Fukushima nuclear disaster in 2011 paved the way for the Red-Green coalition government to phase out nuclear energy. Since then, the German government has decommissioned 8 nuclear power plants, which is reflected in the declining proportion of nuclear energy use. Comparing the energy mix in 2012 to 2008 (Graph 21), the supply of energy in Germany is still largely reliant on fossil fuels, which accounted for 61% in 2012, while renewable energy took a share of 23% in 2012. More importantly, the use of lignite still increased by 3 per cent in 2012, which is also the last year of phase II in the EU-ETS.

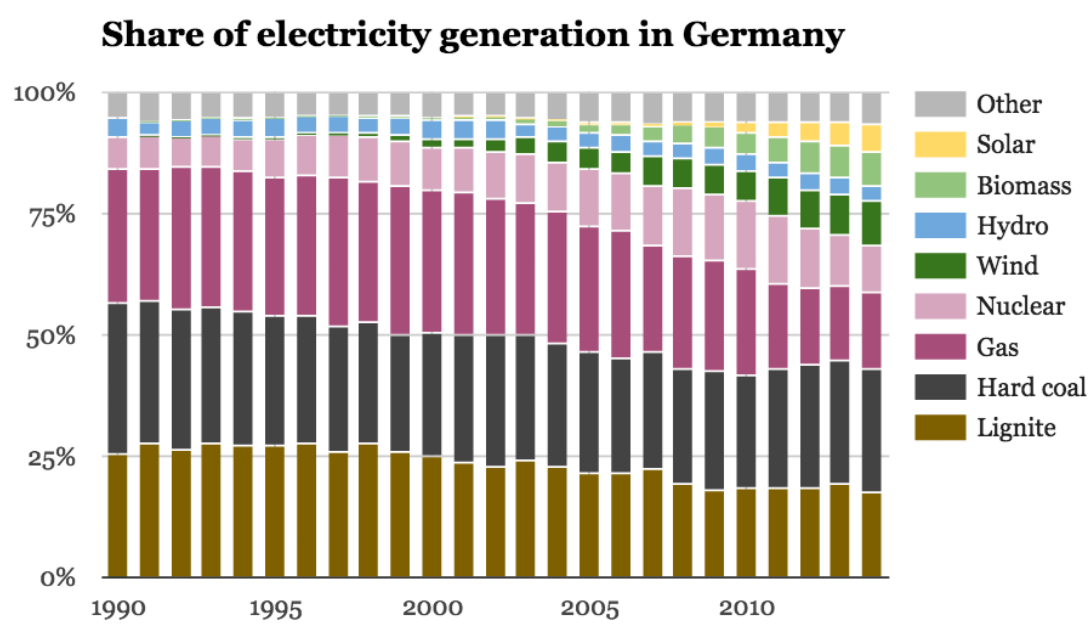


Graph 21. German energy mix and percentage by energy source (compared with 2008).

Source: BDEW, AGEB, unendlich-viel-energie-de, DW.

These observations suggest that even though the aggregated GHG emissions reduction seems remarkable in recent years in Germany, the feature of being of high carbon intensity clearly remains in its energy mix. This is mainly a result of the over 60% of power generation from fossil fuels (including coal, oil and natural gas). In 2014, as can be found in Graph 20 (page 151), over 70 per cent of primary energy consumption was from fossil fuels, with petroleum accounting for one third, gas for one fifth and hard coal and lignite jointly one fifth of the total. Thus, even though the total energy consumption has decreased compared to the 1990 levels, the high carbon intensity of the energy mix, especially the coal and petroleum use, is the reason why German GHG emissions have remained the highest in the EU.

Klein (2012) suggested that electricity and heat production is the reason why the German energy sector retains the lion's share of GHG emissions. So here we look further into German electricity generation by source (in Graph 22) from 1990 to 2014. It appears that hard coal, lignite and gas provided at least 75% until 2004 (the year before EU-ETS implementation). Even in 2014, while the EU-ETS implementation was enforced during its III phase, by which time gas had decreased dramatically, hard coal and lignite still accounted for roughly 45% of electricity generation in Germany.



Graph 22. Electricity generation by source from 1990-2014.

As mentioned before, because of the Fukushima Daiichi nuclear accident in Japan in 2011, the German government accelerated its plan to phase out nuclear power from the energy mix. Klein (2012) assessed that this might lead to a 9%-13% increase in GHG emissions in the German electricity sector. But the German government has actively developed renewable energies and improved energy efficiency with the expectation of filling the gap left by phasing out nuclear energy, which is reflected in the increasing share of renewable energies in the electricity generation mix as in Graph 22. Although the need to replace nuclear energy might still increase coal use, and thereby increase GHG emissions in the short term, it is the increasing renewable energy share that is gradually filling the gap from phasing out nuclear power.

To summarise the above, the reason why Germany remains the biggest GHG emitter with high carbon content is its electricity sector with high reliance on lignite, coal and gas. Although starting from 2004, the electricity generated by these three fuels started decreasing significantly, as shown in Graph 22, the drop in gas-fired electricity is much more than the drop in electricity generated by coal and lignite. Therefore, as Aappunn (2015) pointed out, even though renewable energy in German power generation has grown significantly, from 3.6 per cent in 1990 to 25.8 per cent in 2014, German GHG emissions continued to rise.

After identifying and defining the GHG issue in the German energy sector, the crucial thing is how the stakeholders in industry sectors and in government act and react in business and in the German political system, as both their actions and reactions are vital in determining whether the GHG emissions reduction targets can be reached. Thus, in the next sub-subsection, the analysis will proceed to investigate the actors and what their actions and reactions were when facing GHG reduction targets under the EU-ETS in the Europeanisation stage.

5.2. Germany's Reactions and Actions toward Climate Change

5.2.1. Reactions and actions from the domestic policy network

Germany has long been considered a textbook example of MLG because of the characteristics of the unique federal system with a clear competence division in its policy network (Benz, 2009). As Germany is a federal country with 16 states, or 'Länder', competence is clearly divided between federal level and 'Land' level. The 'right to decide' is mainly controlled by the federal authorities, whilst the "right to act" is left to the 'Land' level (i.e. the sub-national level) (IEA, 2013). Legally, environmental protection and sustainable development were set as fundamental national objectives and incorporated into the Basic Law, i.e. the Constitution of Germany, in the centre-right government led by Helmut Kohl (1987-1998). Since then, the three basic principles of German environmental policy have been clearly set at the federal level, which are polluter-pays, precaution and cooperation (IEA, 2013). In particular, the act of putting the principle of cooperation into its constitution and environmental policy-making echoed the German government's preference for strengthening inter-institutional coordination mechanisms rather than changing the structure by creating 'super-ministries' to relocate the competencies.

Besides, because of the assigned responsibility between Bundestag and Bundesrat and proportional representation in the electoral system, coalition has become a common feature of the German federal government. Under this system, those political parties that gain over five per cent of total votes are guaranteed to get representation in parliament. This means that the government may have to cooperate with other parties when forming all the policies in parliament. In the medium and long term, this reinforces the continuity and stability of policies and regulations. Thus, the German system seems close to type one MLG with a limited number of jurisdictional levels, and system-wide and durable architecture without jurisdiction intersecting at this stage.

How exactly the actors involved act and cooperate, both vertically and horizontally, and further interact with the Europeanisation trend is the focus of this sub-section. To be more explicit, Part A is designed to explore who are the major actors in Germany's climate policy network. Then part B will turn to discussing what features of the network shape and influence the German climate policy mix. Part C then intends to find out how the interaction effects are reflected in Germany's climate commitments when facing the Europeanisation trend.

A. The actors and features formulating German climate governance

Germany is widely known as a forerunner among the leading developed countries both in Europe and at the global level in terms of climate change policy, renewable energy policy and remarkable economic performance (Mez, 2005; Weidner & Mez, 2008; OECD, 2012). Watanabe and Mez (2004) argued that the needs and issue preferences were largely formulated from domestic factors, which helped Germany's success in becoming the forerunner in developing climate policy. Then Weidner and Mez, (2008) explicitly pointed out that owing to the federalism, electoral system and socio-economic conditions in German political culture, the climate issue not only leaped onto the political agenda at the federal level but also continued to expand in both horizontal and vertical directions. This can partly explain why even political and economic events, e.g. German unification in 1990, did not stop Germany paying increasing attention to the climate change issue. Jost and Jacob (2004) argued that the German policy network determined the government's position in international climate negotiations, which has had a major influence on German climate change policies since the mid-1990s. Jänicke (2012) believed that the green party, Die Grünen, made a fundamental step by gaining influence and successfully changing the coalition government in 1998. Since 2000, the influence of the EU has become stronger in terms of *Acquis Communautaire*³⁵, especially the series of climate targets and directives set by the EU institutions. As a result of that, climate policy mix has become even more complex at both state level and EU level.

Based on the statements above, it seems that policy stability and continuity built on the federal government and its inter-ministerial (horizontal) and multi-level (vertical) cooperation have played key roles in Germany's policy network. This exemplifies what MLG says about the networking and agenda-setting capabilities of actors from multiple levels (Schreurs and Tiberghien, 2007; Braun, 2009; Boasson and Wettestad, 2013). So here begins an investigation of who the crucial actors are in the network and agenda setting in Germany.

The main institution at the central level that has competences to develop and to implement environmental policy is the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). In the beginning, BMUB was the

³⁵ The details about the principle of 'Acquis Communautaire' from EU institutes can be found in Chapter 2 Literature Review.

political demonstration that Helmut Kohl built to emphasise environmental commitments, stressing in its conservative-liberal coalition government the idea to ‘Conserve Creation’ (Watanabe and Mez, 2004; Weidner & Mez, 2008). Since then, BMUB has been positioned as the leading ministry to coordinate climate policy, which includes, for instance, climate protection, the interaction between climate and energy policy, and emissions trading, as well as EU climate policy and international climate negotiation (IEA, 2013). Also crucial to developing and implementing environmental policies are three subordinates of BMUB, the Federal Environment Agency (UBA), the Federal Agency for Nature Conservation (BfN) and the Federal Office for Radiation Protection (BfS) (OECD, 2012). Among these three, UBA has played an essential role in providing technical and advisory support for BMUB (IEA, 2013; Hustedt, 2013). Apart from these authorities, the Ministry of Finance (BNF) takes responsibility for fiscal issues related to climate change, such as taxation; the Federal Ministry of Economics and Technology (BMW) takes charge of those energy policies related to the issue of energy efficiency (IEA, 2013). Thus, it is noteworthy that there are contradictory views on climate change policy between BMW and BMUB, which may affect and shape climate policy-making given the consensual nature of the policy network. For BMUB, climate change is seen as a major threat to the overall ecosystem, tackling which relies on strict emissions reduction, while BMW acknowledges the threat from climate change but considers strict reduction targets as a threat to energy prices (Hustedt, 2013).

At Länder level, the institutional structure retains a two- or three-tier system to administer and implement environmental policies. However, compared with other environmental policies like land use and forests governance, the Länder have relatively limited discretion to make climate policies directly, as it is largely derived from the federal level and international climate negotiation. But there are still several means of access that allow the Länder to express their preferences and affect climate policies indirectly. Firstly, each Land has its representation in the second chamber of the German parliament, the *Bundesrat*. According to the Basic Law, all legislative proposals need to be presented to and approved by the *Bundesrat* before being submitted to the upper chamber of the national parliament, the *Bundestag*. Although the *Bundestag* can overrule decisions made by the *Bundesrat*, the assigned responsibility between the two chambers indeed provides access for Länder authorities to be partly involved in policy-making. Secondly, another important mechanism that is

designed to improve cooperation between federal and Länder authorities is the Conference of Environment Ministers, which is held twice per year and participated in by environment ministers from both levels. The conference provides a conduit for Länder authorities to raise their opinions and agenda to federal level (IEA, 2013). Thirdly, the Länder authorities play essential roles in climate policy implementation and also have influence on industry and commerce, which can strengthen the involvement of private actors in climate change measures (Bulkeley and Kern, 2006). This largely strengthens the advisories toward policy goals and priorities and eliminates the information asymmetry problem during policy implementation.³⁶ Thus, it seems that the German political system, in both horizontal and vertical design, can be understood under the principles of MLG.

B. Policy instruments applied in Germany's climate governance

From the policy instruments point of view, as can be seen in Table 17 (next page), apart from the EU-ETS mandatorily transmitted from the EU, the instruments used in the German climate policy mix have basically remained the same, though the federal cabinet has been composed of different political parties at different stages.

³⁶ One example is the Advisory Board on Climate Protection and Energy, formed in Heidelberg (Bulkeley and Kern, 2006). It provides opportunities for the private sector to carry out measures that can not only relieve the environment but remain cost-effective as well to the Länder or to the local authorities.

Table 17. The federal governments and their policy-instruments to tackle GHG emissions in Germany since 1987.

Period	1987-1998	1998-2005	2005-2009	2009- to date
Federal Cabinet	Centre-Right	Red-Green	Grand	Renewed Centre-Right
Coalition	CDU/CSU- FDP	SPD- Alliance '90/The Greens	SPD - CDU/CSU	CDU/CSU-FDP
Chancellor	Helmut Kohl	Gerhard Schröder	Angela Merkel	
Federal Minister of Environment	Klaus Töfer Angela Merkle (1994-98)	Jürgen Trittin	Sigmar Garbirel (2005-2009) Norbert Röttgen(2009-2012) Peter Altmaier (2012-2013) Barbara Hendricks (2013-to date)	
Policy instruments	<ul style="list-style-type: none"> •Command-and-Control •Feed-in Tariff (FITs) •Voluntary Agreements (VAs) 	<ul style="list-style-type: none"> •EU-ETS •Eco-tax •VAs 	<ul style="list-style-type: none"> •EU-ETS •VAs •Eco-tax • FITs 	<ul style="list-style-type: none"> •EU-ETS •VAs •Eco-tax • FITs

Source: collected from Boasson and Wetttestad (2010) Skjærseth and Wetttestad (2010) and Jänicke (2012).

Since Chancellor Helmut Kohl established the BMUB in 1986, this federal authority has strengthened its influence on stimulating institutional cooperation and coordination to work on existing environmental issues and commitments. To an extent, the Kohl government marked a starting point for Germany to pursue its leadership in climate change. Jänicke (2012) pointed out that the enquiry Climate Enquete Commission, which was set up by the Bundestag in 1987, made an influential contribution to providing the knowledge base and potential options of policy instruments for climate change protection for both the policy-making elites and the German public. In 1990, the Environment Minister Klaus Töpfer established the '*Inter-ministerial Committee on CO₂ Reduction* (IMA)', which suggests that the Germany has long acknowledged the importance of coordination and cooperation among the ministries in tackling GHG

emissions reduction.

After that, in 1990, the major political intervention happened, which was German reunification. Jänicke (2012) argued that this also changed the government's priorities and slowed down its pace in setting climate policy. But Weidner and Mez (2008) explained that because the IMA kept developing GHG reduction strategies, German climate strategy did not stop moving forward. Meanwhile, at the global level, Germany showed its ambition by strongly promoting the Berlin Mandate in the first COP of the United Nations Framework Convention on Climate Change (UNFCCC) in Berlin in 1995. Both of these actions clearly indicated Germany's influence and ambition to tackle climate change, both domestically and globally.

The continuity and the consistency that are benefits of the common feature in German governments, i.e. coalition, may also be seen in its climate policy mixes since the Centre-Right government took office in 1987. As listed in Table 17 on page 162, feed-in tariffs (FITs), voluntary agreements (VAs) and ecological tax (Eco-tax) have played major roles in Germany's climate governance even under different Federal Cabinets. First, in 1991 Chancellor Kohl adopted the *Electricity Feed-In Act*, which was one of the major policies to promote renewable energy development in Germany. The measure contained two parts (Watanabe and Mez, 2004; Klein, 2012; Capozza and Curtin, 2012; Karapin, 2012; OECD, 2012):

- The authority set the feed-in tariffs to guarantee the sale price of electricity generated by renewable energy sources (e.g. wind, hydroelectric and biomass);
- The authority placed an obligation on the electricity grid operators to connect renewable electricity generators to the grid and buy the electricity at a rate of 65% to 90% of average tariff for final customers (Mez, 2012:24). In other words, this step guarantees the market for the producers and also provides an incentive to investors, which directly encourages the technology to further develop.

Adding government subsidies to renewable energy, according to Watanabe and Mez's article (2004:114), the *Electricity Feed-in Act*, greatly contributed to an increase of wind power capacity by a factor of around 42 from 1990 to 1998. Afterwards, the Renewable Energy Source Act in 2000 further revised and guaranteed the feed-in price for 20 years (Karapin, 2012). This contributed to the share of renewable energy in electricity generation increasing from 7% in 2000 to 17% in 2010 (BMUB, 2010).

Because of the FITs, renewable energy investment has continued to increase while investment in other domains has dropped, even during the economic recession of 2008-2009 (ibid). From the GHG reduction point of view, approximately 52 MtCO₂e of emissions reduction in 2009 can be attributed to the FITs (Capozza and Curtin, 2012). BMUB estimated that approximately 148 MtCO₂e were avoided through the use of renewable energy in 2014 (BMUB, 2015).

Second, VAs emerged in the German climate policy mix in 1995-1996, which was the compromise that the Federation of German Industries (BDI) made in reply to the Kohl government's request. The BDI agreed to reduce specific CO₂ emissions by 20% compared to 1987 levels from 1999 to 2005 to get the government to exempt them from the energy tax and a heat utilisation ordinance (Watanabe and Mez, 2004; Karapin, 2012). Then, the VAs were further strengthened in 2000, when the industrial associations pledged to reduce specific CO₂ emissions by 28% over 1990-2005 and to cut specific GHG emissions by 35% by 2012. Even the power sector agreed to a decrease of 45Mt in CO₂ emissions by 2020 (ibid). However, since these are self-committed by the industry, without the binding force of law or penalty setting, it is difficult to ratify or monitor the results. For example, though German industry pledged to reduce CO₂ emissions by 8% by 2005 and 35% by 2012, when no carbon tax was levied, eventually they did not fulfil the commitment. Thus, the significance of VAs gradually decreased and they became supplementary instruments in climate governance.

However, from the MLG point of view, as is the case in the UK, this kind of voluntary-based action taken by the industry has played a vital role in Germany's climate governance, though the action of selecting instruments might be different. In the UK case, the government and industry selected the voluntary UK-ETS implementation (2002-2006) with the supplement from government funds (providing the economic incentives);³⁷ but German industries preferred to apply the VAs. Both of these cases show support and willingness from domestic industries for the governments' attempts to reduce GHG emissions. The major difference might be: in Germany, with VAs, it was difficult to effectively ratify and monitor the reduction or even charge the penalty for not fulfilling the commitments; while in the UK, the reduction target (cap) was much easier to track across all sectors in the voluntary-based plus cap-and-trade system of the UK-ETS. Another difference is the economic incentive that the UK-ETS

³⁷ Details about the UK-ETS can be found in Chapter 4.

had from government funds, which served to increase the industry's willingness to cooperate with the government and take abatement measures.

The third policy that is employed and favoured by Germany is the eco-tax. As the OECD (2012) described, strictly speaking, no tax in Germany specifically applies to reducing CO₂ emissions, but some are dedicated to energy-intensive products, and of these the eco-tax is the crucial one. Weidner and Mez (2008) argued that eco-tax was not merely a 'green' policy, but combined this with social-democratic concerns about creating jobs. It may be safe to say that the eco-tax in Germany has more than one objective. According to information from Karapin (2012), OECD (2012) and IEA (2013), the major objectives of the eco-tax are:

- To reduce CO₂ emissions.
- To provide incentives for job creation.
- To encourage innovation.

The eco-tax reform was introduced from 1999 to 2003, which was partly due to Chancellor Kohl reaching agreement with the BDI and the Badische Anilin- & Soda-Fabrik (BASF)³⁸ separately by making both pledge to reduce CO₂ emissions through voluntary agreements and keeping them exempt from compulsory taxation (Watanabe and Mez, 2004). Basically, it introduced a tax on electricity consumption and gradually increased the energy tax on fossil fuels with different tax rates across different fuels (OECD, 2012).

Several key features of the eco-tax need to be further noted, which are directly linked to its major objectives. One is that up to 90% of energy tax revenue collected from the eco-tax was to offset the payroll contributions by employers and employees; a small share of revenue then flowed to support renewable investment (OECD, 2012; IEA, 2013). Another one is the special provision to exempt the energy-intensive manufacturing sectors and the sectors that might face exported-oriented international competition (OECD, 2012; Klein, 2012; IEA, 2013). By far the highest rates were set for gasoline and diesel fuel. But the most striking thing is that the eco-tax, one of whose main objectives was to reduce CO₂ emissions, listed coal among its exemptions (Karapin, 2012; Klein, 2012). Also, the eco-tax was meant to provide an incentive to

³⁸ Badische Anilin- & Soda-Fabrik (BASF): the largest chemical producer in the world, which is headquartered in Ludwigshafen, Germany.

reduce both CO₂ emissions and energy consumption. However, the tax rate used in the eco-tax is not based on the CO₂ content or any other environmental criterion, and besides the over-generous exemption provision for energy-intensive sectors, there is a reduced rate (20% off) for manufacturing sectors (OECD, 2012).

Therefore, given the clear preferences and steady policy instrument-mix, it is understandable that Germany initially remained skeptical toward the EU-ETS. However, when Eurelectric, the transnational European electricity sector association, emphasised that an all-European community-wide solution could make sure all competitors across the common market were on a level playing field, industry and the German government started shifting their position on EU-ETS (Wettestad, et al., 2012). After the idea of setting a community-wide carbon tax was voted against by other MS, Germany became the EU-ETS laggard with clear reluctance.

C. Germany's climate commitments

The negotiation of international climate change agreements and binding reduction targets began in the early 1990s, when Germany had just started the series of reforms that followed its reunification. The BMUB called for a 25 per cent reduction in CO₂ emissions by the year 2005, while BMWi resisted binding targets, worried about losing economic flexibility and dynamism, energy security and competitiveness. The cabinet eventually took BMWi concerns into consideration and pledged to reduce emissions by 25 to 30 per cent by the year 2005 compared with the 1987 level.

The turning point would be the year 1998, in which the Red-Green coalition government emphasised the new era of ecological modernisation in the German climate policy mix. The most representative action it took was to pledge jointly with EU as a whole to reduce GHG emissions by 8 per cent in the Kyoto compliance period (2008-2012), in which Germany would take a share of 21% under EU's BSA of 1998. Since then, GHG emissions reduction has been no longer simply a national intention or target, as it is tied up with the EU commitment to reduce GHG emissions under the legally binding international regime (i.e. the KP).

After that, the reduction targets at the sectoral level were set in the Interim Report of IMA "CO₂-Reduction" in 2000, in which energy and industrial sectors, households and transport sectors had to reduce 50-70 MtCO₂e by 2005. In 2002, the Social Democratic Party of Germany (SPD) formed an alliance with the Greens to become the second coalition government, which further developed the climate policy in Germany

(with the support of the Greens). Yet the Eco-tax reform was blocked, as there was major opposition from the public concerned about increasing oil prices (Watanabe and Mex, 2004).

Meanwhile, the increasing influence of the climate policies and directives from the EU can be clearly observed. The negotiation and the creation of a community-wide emissions trading framework also took place around this time. After the Grand Coalition government replaced the Red-Green government in 2005 (as listed in Table 17 on the page 162), the general thrust of climate change policy in Germany was sustained. The Minister of Environment, Sigmar Gabriel, turned the ‘ecological modernisation’ of the Red-Green government into an ‘ecological industrial policy’ (*Ökologische Industriepolitik*) and produced the ambitious slogan for energy policy-making, the ‘Green New Deal’ (Jänicke, 2012). The ambition of this government was reflected in its commitment to reduce GHG emissions by 40% from 1990 to 2020, with the condition that the EU’s MS commit to a 30% reduction (Karapın, 2012). This showed Germany's clear intention, on the one hand, to pursue its leadership in the EU by announcing a clear, ambitious national target. On the other hand, this can also be interpreted as Germany attempting to upload its national preference for climate target setting to the EU level.

However, domestically, the car and coal industries remained strongly opposed to these targets and became the veto actors against more ambitious climate commitments (Jänicke, 2012). Thus, to strengthen the legitimacy of Germany’s ambitious pioneer status, the Grand Coalition government adopted the *Integrated Energy and Climate Programme* in Meseberg. In this programme, more ambitious reduction targets were set, e.g. overall GHG emissions should be reduced by 40% before 2020 (compared with 1990 levels) and by 50% before 2050 (compared with 2008 levels). A year later at EU level, according to the ‘20-20-20’ and the CEP, Germany pledged to reduce by 14% GHG emissions from its non-ETS sectors by 2020 compared to 2005 levels; and to reduce by 21% GHG emissions from its ETS-sectors by 2020 compared to 2005 levels (OECD, 2012; Klein, 2012). Meanwhile, Germany continued its efforts to encourage both the EU and other countries to commit to more ambitious climate targets.

Afterwards, Germany took the further action to commit itself at the national level to reduce 40% of GHG emissions by 2020; 55% by 2030, 70% by 2040 and 80-95% by 2050 (compared with the reference year 1990) in the 2010 *Energy Concept*. The purpose can be described on two levels. Globally, as argued before, these national

targets further demonstrate Germany's ambition on tackling GHG reduction and climate change. Domestically, setting up the long term reduction targets in the Energy Concept 2010 sends a firm message and a strong signal to stakeholders to encourage green investment and technical innovation (IEA2013).

5.2.2. The implementation of EU-ETS in the Europeanisation stage (2000-2007)

A. The adjustments made for implementing the EU-ETS in Germany

The EU-ETS was adopted and established by the Directive 2003/87/EC in 2003. In the same year, the German Government internalised the Directive and adopted the *Greenhouse Gas Emission Trading Act* (TEHG). Since then TEHG has become the national legal basis for Germany's participation in the EU-ETS, the EU-ETS has become an essential instrument of German climate policy. From the implementation perspective, when internalising a completely new policy instrument, the vital thing is to distribute roles and responsibilities among all participants (companies, verifiers and authorities) and to establish routine procedures (Umwelt Bundesamt, 2009:23). Thus, 'learning-by-doing' was the optimal time to establish and distribute responsibilities between the federal authorities and the Länder, whether by reallocating competence within existing ministries or by creating an independent authority. Germany preferred to roll all major responsibilities from implementing the EU-ETS up in one single institution, so it established the German Emissions Trading Authority (DEHSt) under the UBA.

DEHSt, therefore, has the discretion for implementing all market-based instruments for climate protection, which include Emissions Trading (ET), Joint Implementation (JI) and the Clean Development Mechanism (CDM). In the case of EU-ETS implementation, DEHSt is positioned as the hub among the federal state authorities, verification bodies and the installations subject to the EU-ETS. Its major tasks include (DEHSt, 2009:22-23):

- Allocation and issuance of the EUAs;
- Management of the national Registry;
- Checking emissions reports and sanctioning where necessary;
- Evaluation of emission-relevant data;
- Participation in the further development of emissions trading systems and the flexible mechanisms of the KP at the national, European and international level.

Following the first phase of EU-ETS in Germany, the collaboration between DEHSt and Federal States authorities was: 1) jointly providing support for the implementation and; 2) clarifying responsibility between central government and the Länder. One crucial dispute concerned the fundamental legality of EU-ETS in Germany, which was endorsed by the Federal Administrative Court in June in 2005 and confirmed by the Federal Constitutional Court, i.e. the highest judicial level, on March 31st 2007 in Case number 1BvF 1/105 (ibid). Since then, the legitimacy of EU-ETS in Germany has been accepted.

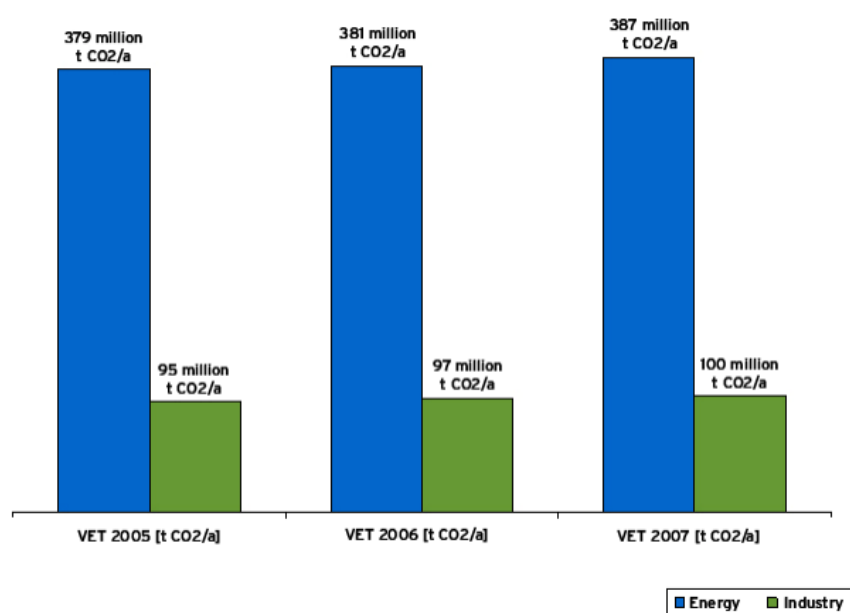
Another central dispute was the question of ‘who decided whether an installation is subject to EU-ETS (Ibid: 20)’. From the DEHSt point of view, according to Article 4 in the TEHG, it is the Federal State’s responsibility to decide whether an installation should be subject to EU-ETS. However, some Federal States (Länder) considered that the DEHSt should make the final decision. Eventually, the Federal Administrative Court decided that this question should not be decided once and for all, due to the responsibilities involved being provided by TEHG Article 20 (Ibid). Apart from this, at the EU level, a legal dispute that involved EU-ETS implementation also arose between Germany and the Commission in 2007 (Case T-374/04). The major concern was the legality of an ex-post adjustment provision in the German NAP. In the end, Germany stopped using the ex-post adjustment in the revised NAP draft for the second phase.

From all the adjustments made during the EU-ETS implementation in the Europeanisation stage in Germany mentioned above, several signs can be found that are related to the research questions. Firstly, Germany acted as a ‘policy-taker’ while adopting the EU-ETS, but it seems clear that there was a ‘misfit’ and ‘reluctance with doubts’ while internalising the EU-ETS into Germany’s inherent climate policy mix. Though the German government intended to follow its tradition by converging all responsibility into one authority (ie. the DEHSt), the jurisdiction dispute between the DEHSt and Länder was an early sign that EU-ETS implementation had started affecting the number of jurisdiction levels and the dispersion of authority. Apart from that, the structure of German inherent climate governance remained generally stable. The decision made by the Federal Administrative Court emphasises the importance of reaching a consensus across the federal and Länder authorities. It seems inevitable that EU-ETS implementation will gradually show a greater need for consensus on vertical coordination and cooperation between the central government and Länder. Secondly, Germany’s failed the attempt to justify the legality of the ex-post adjustment in the ECJ

can be seen as an intention to shape the EU-ETS design. However, as just mentioned in the first point, Germany was merely a policy-taker at this stage, which had to correct the ‘misfit’ at the beginning of internalising the EU-ETS.

B. The ‘learning-by-doing’ implementation of the EU-ETS in Germany

In the first phase, the EU-ETS in Germany covered around 55% of total CO₂e emissions (Weidner and Mez, 2008). A total of 1853 installations were subject to the EU-ETS in Germany, of which 622 installations were from energy-intensive industrial sectors and 1231 from the energy sector. The total cap that the German government set in the first NAP was 1519 Mt EUAs for three years, of which 1199 Mt EUAs went to energy sector (Activities I-V), and 320 Mt EUAs were allocated to energy-intensive industrial sectors (Activities VI-XV). During 2005, annual emissions rose by 3MtCO₂e, and the increase in emissions in 2006 was one per cent, which came from the EUA allocation for new entrants and capacity extensions. In 2007, the increase in emissions reached two per cent. According to the DEHSt assessment (2009), almost 80 per cent of EUAs in the first phase flowed into energy conversion, which is directly reflected in their verified emissions figures, as can be seen in Graph 23. Although emissions in the energy sector between 2005 and 2006 rose by less than one per cent, also increasing by less than two per cent from 2006 to 2007, we can still see that lion’s share of GHG emissions comes from the energy sector.

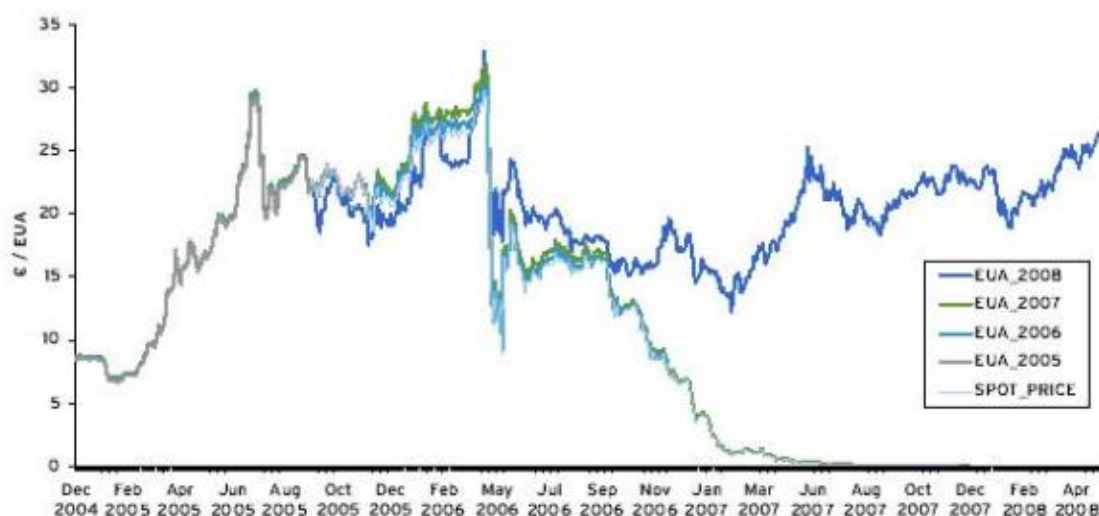


Graph 23. The verified emissions development for energy (Activities I-V) and industry

(Activities VI-XV) sectors. Source: DEHSt, 2009:70

C. EUA price variation and the market reaction to inadequacies in the EU-ETS design

While many MS had over-generous and very lax NAPs for the first phase, the NAP I in Germany was even more generous than the rest (Capozza and Curtin, 2012). The surplus allowances that were allocated in Germany reached 53 million EUAs during the first phase. Put simply, the allocated EUAs that were issued and supplied to the market were much more than the German ETS-sectors actually demanded. Besides, considering that the major objective set in the first phase was ‘learning by doing’, the Commission did not provide the banking option which was intended to secure the EUA price in the second phase. Taking the over-allocation issue plus the ‘un-bankable’ design together, it is no surprise that the EUA price kept declining to almost zero in December in 2007 (shown in Graph 24 on the next page).



Graph 24. Price developments for EUA from December 2004 to June 2008. Source: EEX

For a market-based instrument like the EU-ETS, the EUA price is expected to provide economic incentives to further reduce GHG emissions in cost effective ways. And the price signal arising from the EUA trading is also theoretically influential to investment decisions, e.g. the EUA future price reflects the expectation of the abatement cost of reducing GHG emissions, if the EUA's supply and demand were liquid. More precisely, according to DEHSt's understanding of EUA price:

'The price of emission allowances acts as an incentive for all installations to reduce

emissions and sell surplus allowances, whether they have actually been trading or not. In addition, the expected price of emission allowances becomes a factor in investment decisions (DEHSt, 2009:87).’

As can be found in Graph 24, The EUA price rose relatively high in 2005, and the average price reached €18.10. During the first quarter of 2006, EUA spot price climbed over €25 Euros and reached €30. But the DEHSt (2009:87-88) gave two reasons for the relatively high EUA price in the beginning of Phase I, which are: i) relatively few transactions, which limited the liquidity and increased the price; ii) the scarcity signal from declining EUA allocation in the second phase.

The EUA price started decreasing in April in 2006, which saw almost a 30 per cent drop, triggered by the publication of the Verified Emissions Tables (VET) for 2005 by MS (UBA, 2012). It was the first time that total emissions data and level of all ETS-installations were released, and it highlighted the truth that the actually verified emissions were far below the historic emissions or projected emissions level. Added to the over-generous EUA allocation in the NAP I, the high level of EUA surplus was thereby confirmed. As a market-mechanism instrument, the EUA market reacted, and this led directly to the sharply dropping trend of EUA price from 2006 to 2007. By August 2007, the EUA spot price was merely 65 Eurocents.

More problems accompanied the EUA over-allocation. First of all, the EUA price was too low to provide enough economic incentives for installations to take further reduction measures, though theoretically the EUA price was meant to reflect and to price the externality, which would add to the production cost and provide the incentive to the installation owners to take action on GHG reduction. Many scholars have also affirmed that this was the major reason why the EU-ETS could not contribute to GHG reduction in the first phase (OECD, 2012; Klein, 2012). Moreover, observation of German electricity sectors also suggested that the EU-ETS in the first phase did not trigger changes in the technology and developments in German power generation (Hoffman, 2007). In this situation, it is not surprising that in the first phase of the EU-ETS, the CO₂ reduction actually achieved was only 1.5 Mt per year (UBA, 2005). Worse was that this indirectly shifted the reduction burden of Phase I to non-ETS sectors in Germany, such as transport and household sectors (Weidner and Mez, 2008).

Secondly, there was a windfall issue in the power and electricity sectors, which was the result of two problems in EU-ETS’ policy-design in Phase I, 95% free

allocation and over-allocation of the EUAs. In the German case, there was also the ‘transfer rule’,³⁹ which made the windfall problem in Phase I even worse (Bode et al., 2005). Based on data collected from Öko-Institut (2010), the windfall that German electricity sectors received was about €39 billion. The major source of the windfall was the increasing electricity price to the end-users, to whom the carbon price was passed on, even though the majority of the allowances in the first phase were allocated for free. Trautmann (2007) found that even though the electricity price was also affected by external factors like the gas price, the electricity price rose 9% during the 6 months before EU-ETS implementation, but 57% in the 6 months afterwards. This observation directly showed that the influence of implementing the EU-ETS was not limited to the ETS-sectors but possibly extended to all end-users, i.e both ETS and non- ETS sectors.

If receiving windfall profits in electricity generation was not bad enough, even worse was the expectation of receiving more windfalls from the free allocation. Not only that but the attractiveness of investing in coal also increased in Phase I as the EUA price provided insufficient incentive to invest in cleaner alternatives and the EUA free allocation just exacerbated the problem (Pahle et al., 2011). According to Deutsche Bank research, the implementation of the EU-ETS only acted as a brake and reduced the investment on coal-fired power stations in 2005 (Auer, 2014). This indicates that different allocation approaches not only influence the efficiency of the EU-ETS but may also have a medium and long-term impact on investment choices in all sectors, especially in the electricity sectors.

³⁹ The ‘transfer rule’ is Clause 10 in the Allocation Act (ZuG) in Germany. It is set for allocating the EUAs for the operator who replaced the old installations with the new one. (The old installation’s operator can receive the same quantity of EUAs as long as he gets the new installation to replace the old decommissioned one in 3 months. These EUAs will not be reduced within 14 years. Yet the ‘transfer-rule’ is only applied to the old installations’ replacement, it creates different treatment and distorted competition between operators who get the EUAs by ‘transfer rule’ and those installation owned by the new entrants.)

5.3. The Centralisation Stage (2008-2012): the Implementation of Revised EU-ETS in Germany

5.3.1. Getting ready for the centralised EU-ETS in Germany

Starting from the first phase, the German government specified the quantity of allowances allocated to regulated sectors and installations by the NAP, the Allocation Act 2012 (ZuG 2012) and the Allocation Ordinance 2020 (ZuV 2020). When the negotiation of the CEP started in 2007, Germany foresaw two main streams at the EU level which were aligned with Germany's preferences, i.e. the urgent need to fix several major EU-ETS design features and to establish targets to stimulate renewable energy development in order to accelerate GHG reduction. By improving the carbon price signal in the EU-ETS and further emphasising renewable energy development, Germany was able not only to consolidate its climate leadership in both EU and global spheres but also to keep the green economy growing, and strengthen its advantageous share in green technology and environmental goods and services (EGS) (OECD, 2012). In 2009, turnover in the German EGS sector had already reached €44.6 billion, which accounted for 1.9% of GDP (OECD, 2012). Maintaining its competitive advantage and securing its green market share have become essential for not only German government but also German industry. In this circumstance, how to retain clear and stable climate change policies and minimise the cost from regulations became one of Germany's domestic preferences when negotiating climate targets and fixing the EU-ETS in the EU.

Thus, the German government took a forerunner role in adopting the *Integrated Energy and Climate Programme* in Germany in 2007, further emphasising the development of renewable energy to stimulate GHG reduction. While Germany held the Presidency of the European Council, it actively promoted and set the parameters for an integrated European climate and energy policy in the European Council. This could be interpreted as an attempt to reinforce the German government's leadership within the EU's long-term plan to de-carbonise the EU economy. On the other hand, this can also be understood as an action to upload the German national preference to strengthen the role of energy policy in reducing GHG emissions and ensure its own benefit in EU energy governance in the long run. Apart from these, the German federal cabinet also updated its related national legal texts by adopting the Allocation Ordinance 2020 (ZuV 2020) and the Emissions Trading Regulation 2020 (EHV 2020) to support and further improve EU-ETS implementation in Germany in 2011 (IEA, 2013).

When the CEP was adopted in the EU, it signaled that climate governance in the EU would gradually integrate and overlap with its energy policy. To an extent, the CEP created a synergy between the EU-ETS and German national climate and energy policy, the Integrated Energy and Climate Programme in 2007 and later the Energy Concept 2010.

In the Energy Concept 2010, the national Renewable Energy Strategies (RES) and Germany's determination toward its GHG reduction commitments were reinforced. The aim that was set for the Energy Concept 2010 was to help Germany to become 'one of the most energy-efficient and green economies in the world while enjoying competitive energy prices and a high level of prosperity' (Bundesregierung, 2010). Apart from aiming to reverse the slowdown in GHG emissions reduction, Germany also pursued a reliable, secure and affordable energy supply. In other words, the Energy Concept 2010 represents the clear and important principles of Germany's energy supply, which are environmental, sound, reliable and affordable, to be achieved by developing renewable energy and improving energy efficiency.

Meanwhile, the Energy Concept 2010 can be seen as a demonstration of political will by the German government to provide certainty to both consumers and producers on environmental policy until 2050 (Klein, 2012). In addition, the Energy Concept 2010 also represents an essential step in strengthening inter-ministerial cooperation in Germany, as it was jointly developed and completed by the BMUB and the BMWi (OECD, 2012). This closer and deeper inter-ministerial cooperation can be seen not only in the policy-network reshaping but also in the interaction when implementing both the EU and state climate and energy policies. Thus, it is safe to summarise that after the series of modifications since 2008, the major strategy that Germany has set for tackling climate change is bound up with its energy efficiency and renewable energy developments. More explicitly, the synergy between Germany's national climate and energy governance and EU's climate and energy governance has been strengthened. Besides, all these actions and reactions may add to the argument that EU-ETS implementation indeed, on the one hand, affects national climate governance and, on the other hand, continues to influence integration at EU level.

5.3.2. The actions of implementing the EU-ETS in the Centralisation stage (2008-2012) in Germany

The second phase of the EU-ETS coincided with the Kyoto commitment period (2008-2012), which made GHG emissions reduction more important under EU-ETS implementation, as it was directly connected to whether the EU, as a whole, could reach its reduction commitment under the KP. Compared to the first phase, the NAP II for Germany was tightly controlled because the Commission intervened and requested that the cap be cut by another 17MtCO₂e (Jänicke, 2012). This made Germany one of a few MS in the EU whose total EUA allocation was far below its verified emissions in the second phase (IEA, 2013).

Apart from the EU intervention, several factors at the global level also made the EU-ETS phase II in Germany start in a relatively tough situation. European power demand had decreased because of the economic downturn, the emergence of cheaper shale gas from the United States triggered a fall in coal and gas prices in Europe and there was stalemate in global climate negotiations (Berghmans and Alberola, 2013). These are the challenges that Germany faced in phase II, and all the ETS-sectors in Germany would still have to achieve reductions of 20.9 MtCO₂e per year in this phase. Nevertheless, the second phase of EU-ETS implementation in Germany can still reveal several crucial issues and problems for the next round of EU-ETS reforms.

Germany's total annual allocation for phase II was 451.8 allowances per year (See Table 18). About 90% of allowances were by free allocation, and nine per cent of these allowances (about 41 million EUAs) were allocated by auctioning (IEA, 2013). The CDC Research (2013) calculated that the total revenue Germany received from EUA auctioning in phase II reached €2964.8 million. This is the successful forerunner-reap of practical experience of EUA auction and also draws a convincing picture that the EU-ETS can provide an economic incentive when allocating allowances by auction. Meanwhile, negotiations proceeded about who could utilise the revenue from the EUA auctioning and how, as auctioning was set to be the primary EUA allocation approach in the CEP in 2008. In Germany, the revenue obtained from EUA auctioning automatically goes to the Special Energy and Climate Fund, which was established and designed to support the implementation of climate and energy policies. IEA (2013) speculated that around 9.7 billion Euros were available to the Energy and Climate Fund up to 2016, which provided supplements to the federal budget for tackling climate change. So far, Germany is the only MS which has established a full political budgetary

earmarking of its EU-ETS revenues (separated from the national budget structure) for both national and global climate finance (Esche, 2013:10).

Table 18 Selected information from Phase II of EU-ETS: (Units: MtCO₂e)

	2008	2009	2010	2011	2012
CAP	451.8 Mt MtCO ₂ e				
Total Installation	1660	1654	1628	1648	1629
Free EUA allocation	389.1	390	396	402	416
Auctioned EUAs	41 Million EUAs per year				
Credits *	CERs: 23.7 ERUs: 0	CERs: 26.0 ERUs: 0.7	CERs: 33.4 ERUs: 4.2	CERs: 41.1 ERUs: 33.2	CERs:45.1 ERUs:94.8
Total emissions*	472.6	428.2	453.9	450.3	452.6

Source: DEHSt, 2009, 2010, 2011, 2012, 2013, 2014.

* The certificates awarded for implementing the Clean Development Mechanism (CDM) and the Joint Implementation (JI) under the KP, and both credits from which can be exchanged for EUAs and used in EU-ETS market (see Appendix).

** The unit used in total emissions is million tonnes carbon dioxide equivalent (MtCO₂e).

According to the Linking Directive⁴⁰ and the TEHG, starting from phase II the installations subject to the EU-ETS are able to use the credits received from the project-based flexible mechanisms under the KP to reach their individual reduction commitment, i.e. the Certified Emissions Reductions (CERs) from the CDM and Emissions Reduction Units (ERUs) from the JI. The limit for using these credits is set at 22 per cent of their individual EUA allocation in Germany, which is about 435 million (DEHSt, 2013). As we can see in Table 18, the total credits usage in each year of Phase II was indeed below this threshold. However, the increasing trend of using these credits indicated a need for cautious monitoring to enforce the limit, considering the huge surplus of allowances already in the carbon market.

⁴⁰ Details can be found on the Appendix.

A. Overall GHG emissions variation in Phase II

From the GHG emissions reduction point of view, the overall GHG emissions subject to the EU-ETS was reported as 472.6 MtCO_{2e} in 2008, which is around three per cent lower than the emissions in 2007. However, as can be seen in Table 18, it was above the national cap by about 20.8 MtCO_{2e}. Then, because of the Euro crisis and the economic downturn beginning in 2008, it is not surprising to see that total emissions in 2009 reached their lowest point since 2005 (428.2 MtCO_{2e}). Afterwards, it was predictable that GHG emissions would increase as the economy recovered, and they did, by six per cent in 2010 compared with 2009. Then, the emissions of 2011 (450.3 MtCO_{2e}) were about two per cent less than in 2010 (453.9 MtCO_{2e}), though the economy continued to grow (DEHSt, 2012). According to the calculations done by the DEHSt, the CO₂ emissions reduction in 2011 was particularly marked in the energy sector and there was no clear adverse effect on GHG emissions from decommissioning nuclear power plants in 2011. Unfortunately, the annual emissions figure of 2012 told a different story, rising even higher than the cap of Phase II. Following DEHSt's estimation (2013), the increase was owing to a change in combustion fuel preferences in the energy sector, where emissions from brown coal and lignite increased by four per cent each. Looking through the five years of phase two, apart from the emissions reduction in 2009, only in 2010 were the total emissions below the annual national cap (see Table 18). All these data suggest that whether Germany can fulfil its climate commitments by 2020 with existing climate and energy policies remains uncertain. Also, EU-ETS implementation in Germany seemed not as efficient as expected.

B. EUA allocation and verified GHG emissions analysis at sectoral level

Besides analysing the overall GHG emissions and EUA allocation, it is also crucial to further unpack GHG emissions and EUA allocation at sectoral level. As the scale of targeted sectors under the EU-ETS is still expanding, further assessment and monitoring of the problematic sectors (or installations) can increase the efficiency of the EU-ETS in reducing GHG emissions. This is especially important for a member state like Germany, which is still the top GHG emitter in the EU and possesses the lion's share of EUAs demand in the EU-ETS.

In Germany, the way allowances are allocated is regulated by the TEHG, 2012 Allocation Act (ZuG 2012) and the 2012 Allocation Ordinance (ZuV 2012). Compared with Phase I, the number of installations subject to the EU-ETS was about ten per cent

fewer, which is due to decommissioning, splitting and mergers of installations and the change of participation criteria for certain small emitters in the ceramics industry (DEHSt, 2013). But starting in 2008, apart from a few cases of exclusion, all installations in the first phase continued to be regulated in the second phase of the EU-ETS. According to the classification of installations, TEHG Annex 1 divided the ten regulated ETS-sectors into 21 activities (DEHSt, 2009), but for the purposes of this analysis of phase II implementation, the ten ETS-sectors will be divided into just two types: the energy sector (I-V) and industrial sectors (VI-XVIII).

As can be seen in Table 19 on the next page, the emissions share from the energy sector was 79 per cent of total emissions per year in Phase II (DEHSt, 2013). Comparing the volume of free EUA allocation to the total emissions figure per year can confirm that Germany's total EUA allocation was indeed far below its verified emissions in each year in the second phase, especially for the energy sector. However, if the auctioned 41 million EUAs are put into the calculation, taking 2012 as an example, there were roughly 4.4 million surplus EUAs in its emissions trading. Added to the total credits surrendered from the CDM and the JI in 2012 (Table 18), there were in total 144.3 million surplus EUAs in 2012, with a market value of €1.1 billion in 2012.⁴¹

Table 19. The figures of emissions and the number of installations subject to the EU-ETS in Germany: (Unit used in presenting the emissions figure: MtCO₂e)

Phase II		2008	2009 *	2010	2011	2012
Energy	Installations	1109	N/A	1083	1104	1094
	Emissions	369	338.3	356.3	351	356.3
	**	(78%)	(79%)	(78.5%)	(77.9%)	(78.7%)
Industry	Installations	551	N/A	545	544	536
	Emissions	104	89.9	97.5	99.0	96.3
Total Emission		472.6	428.2 (-9%)	453.9	450.3	452.6
Free EUA allocation		389.1	390	396	402	416

*The total installation number subject to the EU-ETS in Germany in 2009 was 1654; however, the individual numbers of energy and industrial sectors were not available. Source: DEHSt, 2009, 2010, 2011, 2012, and 2013.

⁴¹ The average market price for 1 EUA was around €8 in 2012.

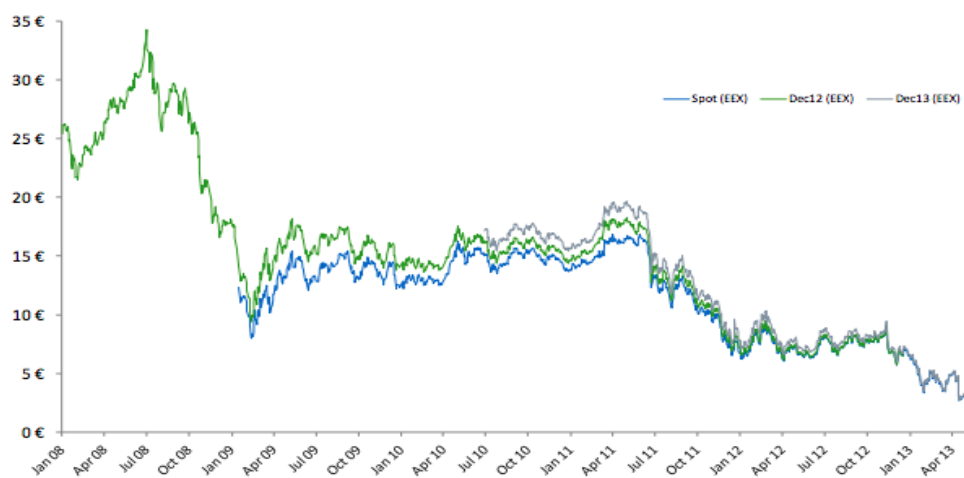
** The percentage shows the share of total emissions per year.

Further investigation within the energy sector in Germany reveals that the RWE, E.ON and Vattenfall were the top three GHG emitters in Phase II, and these three, as a whole, needed to reach the requested compliance of 490 MtCO₂e between 2008 and 2012, which represented about 58% of the shortfall for the whole energy sector (Berghmans and Alberola, 2013). Also, the number of allowances distributed in the energy sector dropped significantly, which was intended to eliminate the windfall issue in Phase II. Furthermore, a new system of fuel-specific emissions standards based on the best available technology (BAT) also affected the free EUA allocation in the energy sector in Germany's Phase II implementation. The energy sector, especially the large combustion installations (Activities I), then became net buyers in addition to their free allocation allowances in Phase II (DEHSt, 2012). In other words, the German energy sector faced not only the more stringent national cap that was ratified by the Commission but also encountered the new emissions standards applied by the German government in the second phase, both of which required the German energy sector to face the GHG reduction target and abatement cost without the expectation of windfall profits.

The situation is different for the industrial sectors in Germany. With the concern of facing a tougher international competitive environment, the industry sectors subject to the EU-ETS were given only a moderate statutory reduction of 1.25 per cent in their free allocation quantities. As shown in Table 19 on the previous page, those industrial installations subject to the EU-ETS in Germany emitted 96.3 MtCO₂e in 2012, 2.8 lower than the emissions in 2011 and 7.7 MtCO₂e lower than the emissions in 2008. The DEHSt (2012) then assessed that the average emissions CO₂ reduction per year was about 1.8 per cent in Phase II. However, the surplus allowances in the industrial installations reached 101.3 Mt EUAs before the end of phase two, although the GHG emissions of each industrial installation decreased at different rates. The market value of the surplus still reached 400 Euros (DEHSt, 2013).

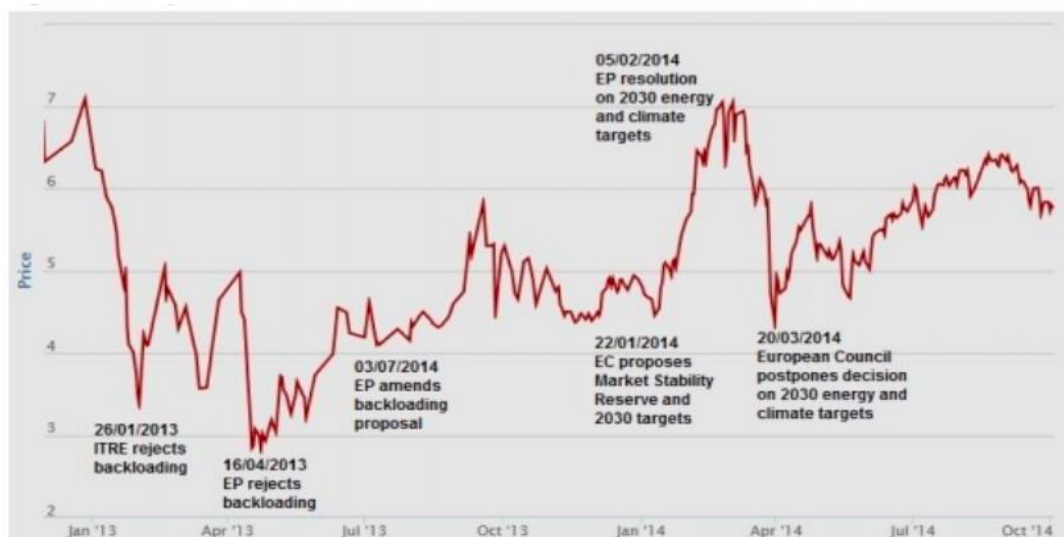
C. The EUA price variation in Phase II

Looking at the EUA price from January 2008 to April 2013 in Germany (Graph 25), it was kept relatively high at the beginning of 2007, and even reached €34 in July 2008. But then the price started fluctuating around 25-30 Euros. After October 2008, the EUA price fell dramatically, which was due to the economic recession and financial crisis. Following the economic recovery, the price rose from its low point of around €10, peaking at €18 in May 2011. Then the price continued to fluctuate between about €6 and €9 until November 2012 before dropping to below €3 in 2013.



Graph 25. EUA Prices from January 2008 to April 2013. Source: DEHSt, (2013:8)

Afterwards, as can be seen in Graph 26 (next page), the EUA price started climbing when the Parliament re-started negotiations to amend the ‘Backloading’ proposal, and the 2030 targets and the Market Stability Reserve (MSR) idea came out in the beginning of 2014. From February to July in 2014, the EUA price kept fluctuating between €4 and €7. As Erbach (2014) argued, the fluctuating EUA price mainly resulted from the EU 2030 Climate and Energy Framework negotiations at EU level. When the Council of European approved the 2030 Framework in October, the EUA price climbed a bit to around €6.



Graph 26. The EUA prices from 2013 to 2014. Data: EEX, Sources: Erbach (2014:5)

Apart from the uncertainties over the climate negotiations in the EU, several other reasons can explain the declining trend of the EUA price. And, to some extent, they can also apply to the majority of MS, not just to Germany. One is the surplus of EUAs that was still building up in Phase II. The economic crisis led to lower demand for energy use as a result of decreasing production, and falling demand for EUAs. Under this circumstance, when the annual supply of EUAs remained the same, the EUA price would then inevitably decrease. Also, as mentioned in the former paragraph, access to the cheaper international credits in Phase II also brought a certain amount of pressure on the EUA price.

The Commission (2014) pointed out that interaction effects with other climate and energy policies also played a role in building up the EUA surplus, which would have affected the EUA price (this will be explained in sub-section 5.4). IEA (2014) put more emphasis on insufficient flexibility in the existing EU-ETS design when facing the demand-side shock, and saw this as another reason why the EUA surplus kept increasing and distorting the EUA price. Several MS, including Germany, support this argument and suggest that reform of the EU-ETS is urgently needed in the EU, which can partly explain why the EU 2030 Climate and Energy Framework negotiation moved forward more quickly in the second half of 2014.

5.4. The Reconciliation and Integration Stage (2013 to present): the Attempt to Accelerate GHG Reduction through the ‘Climate Action Programme 2020’?

5.4.1. The interaction effects among policy instruments in Germany

This research agrees that the interaction effects from different policies may also have decreased the efficiency of EU-ETS, as the Commission suggested in 2014. In the case of Germany, two representative policy instruments that might have implicit carbon price signals and further distort the EUA price are Eco-tax and FITs. Both of them have been the subject of lots of analysis and influence assessments (Lawson, 2010; OECD, 2012a, 2012b; Capozza and Curtin, 2012; Karapin, 2012; IEA, 2013). Both Klein (2012) and IEA (2013) estimated that with the more ambitious climate and energy targets set by the German government in its Energy Concepts in 2010, it might not be possible for Germany to reach its targets by relying on existing approaches without taking additional measures. Thus, it is even more crucial for the German government to evaluate the interaction effects across all policy instruments in its climate governance. Although the eco-tax and the FITs’ objectives may not necessarily have been entirely related to GHG reduction, as time passed and the idea of combining renewable energy development and GHG emissions reduction took hold in the EU, these policy instruments acquired an implicit carbon price, which made them even more influential.

According to the evaluation by Capozza and Curtin (2012), the cost of reducing one tonne of GHG emissions by the FITs in Germany, which ranges from approximately €65 per tonne of CO₂ for hydropower, biomass and biogas to €655 for solar, would be much higher than the EUA price in the EU-ETS. The average EUA price in 2011 was only around €15-€20 (Capozza and Curtin, 2012; Lutz et al., 2013). Tarber and Kemfert (2009) also calculated that an increase in electricity generated by renewable energies with FITs would reduce the EUA price by 15%. Another drawback of FITs is that they pass on the cost to the end-users by means of ‘EGG surcharge on the electricity price’⁴², which, based on the analysis in the OECD Environmental Performance Review (2012), cost €46 billion between 2000 and 2010. Thus, in the long term, without cautious

⁴² EGG surcharge is regulated in Germany’s Renewable Energy Act in 2012, which is part of the mechanism to finance the FITs. Appunn (2014a) provided the explanation as follows: ‘it is the difference between the wholesale market price for power on the electricity exchange and the higher fixed remuneration rate for renewable energies.’

monitoring and adjustment of the rate, FITs may not be a cost-effective way to finance and develop renewable energies.

On the other hand, in the case of eco-tax, the objective set was to provide an incentive to reduce both CO₂ emissions and energy consumption. However, the tax rates used in the eco-tax are not based on the CO₂ content or any other environmental criterion, while the exemption provisions for energy-intensive sectors and the reduced rate (20% off) for manufacturing sectors are over-generous (OECD, 2012). In particular, diesel is taxed less than petrol, despite having higher carbon content (Capozza and Curtin, 2012; OECD, 2012). Estimates suggest that Germany's eco-tax helped to reduce GHG emissions by approximately two to three per cent between 2003 and 2010 (Knugge and Goerlach, 2005; Klein, 2012). Besides this, the improper exemption of coal also led to a regulation gap in Germany, which may indirectly encourage increasing coal investment when nuclear power is gradually phased-out from Germany's electricity generation mix (Klein, 2012) and slow down the decrease of coal use. In these circumstances, the conflicts between these different policies may decrease Germany's aggregate environmental effectiveness. The OECD (2012) also suggested that this kind of energy taxation and the EU-ETS should be properly connected in order to provide a meaningful and coherent carbon price signal across MS, which would also decrease the double regulation between ETS and non-ETS sectors.

To summarise the above, the issue of interaction effects between EU-ETS implementation and national plans may have become more prevalent in the EU since the climate and energy policies in each MS have been significantly affected by the series of policy integration and target setting measures at EU level in recent years. In the case of Germany, the inconsistent carbon price signals, double regulation and gap problems in its climate governance have indeed occurred in the overlapped area among these three instruments (i.e. the Eco-tax, the EU-ETS and the FITs). Both the OECD (2012) and the IEA (2013:50) have noticed this issue and suggested that Germany will achieve significant GHG reduction domestically by 2020 only when additional measures or adjustments are made to fully comply with the 40% reduction target, especially coordination among different instruments.

From Germany's point of view, it has taken a proactive attitude toward climate and environmental governance since 2000. More explicitly, according to what has been demonstrated already, starting from the EU-ETS development in the Europeanisation stage, Germany has actively participated in updating or influencing the EU's climate

and energy integration agenda-setting, and particularly the climate and renewable energy target-setting. In recent years, a ‘three-pronged approach’ to tackling climate change has gradually emerged in the German climate policy mix, while the EU leaders prepared to set out another cornerstone of climate and energy policy until 2030 in 2014. As Germany's Secretary of State for Energy, Rainer Baake announced and reaffirmed Germany's strategy based on the ‘three-pronged approach’: ‘ [...] in addition to a climate target of at least 40 %, we are calling for binding targets [at state level] for both renewable energy and energy efficiency of at least 30% (CLEW, 2014)’. More precisely, this ‘three-pronged approach’ means that in order to meet the GHG reduction target and tackle climate change, the supplement and support from both improving energy efficiency and increasing the share of renewable energy are needed.

This idea has been strongly supported by the German public, which is reflected in the survey from polling agency TNS commissioned by and organised with NGOs (e.g. Greenpeace). The survey showed that over 80% of Germans wanted to see the Merkel government commit to accelerating the development of energy efficiency and setting binding targets for renewable energy. So it is no surprise that Germany would not only pursue binding targets for both energy efficiency and renewable energy development but also, domestically, continue to reform its energy mix (a/k/a *Energiewende*) to tackle climate change and reduce its GHG emissions.

5.4.2. Germany's actions in implementing the EU-ETS in the Reconciliation and Integration stage (2013 to present)

In 2014, while the European institutions and MS intensively negotiated the 2030 framework at the EU level, the main focus of the MS was on two issues, which were the target-setting conflict and the reform of EU-ETS. Regarding the target-setting, as mentioned earlier in this chapter, Germany has constantly and actively promoted setting ambitious emissions reduction targets in the EU, whilst it has also taken action by setting ambitious targets in the domestic sphere. Thus, Germany and certain other countries like the UK and Sweden have been calling for a reduction target in the EU of at least 40 per cent by 2030 (Evans, 2014). Apart from the emissions reduction target, Germany also advocates that the EU should set clear binding targets for renewable energy development for each MS. So far, there is only a legal binding target for renewable development at EU level in the 2030 Framework, which may undermine the effectiveness and enforceability of renewable energy directives (i.e. 20-20-20 targets) from the EU. This absence of legally binding renewable energy targets at national level

in the 2030 Framework may well water down the MS' willingness and ambition to take further action on renewable energy. Indirectly, this may affect Germany's benefit in its green technology and renewable development, (since the cost might be higher). Unfortunately, the idea of binding targets for each MS is not favoured by the majority of MS, among whom the UK has shown clear opposition to it.

Regarding EU-ETS revision, Germany, as a major GHG emitter in the EU which is sensitive to both the EUA price and allocation, strongly supports the early start of the MSR in 2017 to stimulate the over-low carbon price, an idea which has already gained the support of many MS (BMUB, 2014:31), such as Sweden and the UK. In February 2015, Germany, the UK and some other MS signed a letter calling for a reform of the EU-ETS and emphasising the requirement of all sides to cooperate to seek an outcome that was both ambitious and pragmatic. Apart from supporting the early start of the MSR, regarding the surplus EUAs removed from the market under 'Backloading' in 2014, the German government started by stating that these EUAs should be transferred to the MSR immediately on June 2014 (BMUB, 2014), but later it raised the suggestion of permanently cancelling 1.6 billion EUAs in the DEHSt Discussion Paper on Designing the MSR (2014). For the initial laggard toward the EU-ETS that Germany was, actively taking part during these consultation and negotiation processes shows that the EU-ETS implementation and its revision changed Germany's position and attitude to the EU-ETS. But how Germany sustains its advantaged and influential status within the EU's climate governance during the Reconciliation and Integration stage still needs to be investigated from the domestic angle.

Domestically, with the aim of reaching the 2020 climate target, the German cabinet adopted the *Climate Action Programme 2020* (hereafter referred as the CAP 2020) in December 2014. The BMUB specially highlighted that the CAP 2020 contained additional measures to supplement and speed up its GHG emissions reduction under the energy and climate policy measures introduced to date. The CAP 2020 is positioned as an additional national instrument with the projected additional contribution of approximately 62 to 78 MtCO₂e by 2020 compared with the current projection for 2020 (Table 20 on the next page).

Table. 20 Overview of the CAP 2020 and the correspondingly expected contribution to GHG reduction. Source: BMUB (2014b:2)

Key policy measures	Contribution to greenhouse gas emission reduction (million t CO ₂ equivalent)
National Energy Efficiency Action Plan (NAPE) (without measures in the transport sector)	approx. 25 - 30 million t (including energy efficiency in buildings)
Strategy on climate-friendly building and housing (contains NAPE measures specific to buildings)	In total approx. 5.7 - 10 million t (1.5 - 4.7 million t of which in addition to NAPE)
Measures in the transport sector	approx. 7 - 10 million t
Reduction in non-energy-related emissions in the sectors:	
• industry, commerce/trade/services and waste management	3 - 7.7 million t
• agriculture	3.6 million t
Emissions trading reform	Dependent on decisions at EU level on structure
Further measures, especially in the electricity sector	22 million t
TOTAL:	62 - 78 million t
Climate mitigation gap: 5 to 8 percentage points \triangle 62.5 to 100 million tonnes CO₂ equivalent	

As listed in Table 20, the sectors that are included in the CAP 2020 contain both ETS and non-ETS sectors. The CAP 2020 also contained the intention of eliminating the reduction gap or double-regulation problem between ETS and non-ETS sectors. Of the regulated sectors, the electricity sector is recognised as the most controversial focus, because it is not only an ETS-sector but also the major GHG emission contributor in Germany. The German government has claimed that by applying the measures under the CAP 2020, around 22 MtCO₂e in GHG emissions can be reduced in the electricity sector. However, concerns about the potential damage this national instrument might cause to EU-ETS implementation have started being noticed (Lang, 2015). From the policy analysis point of view, the CAP 2020 shows a clear step forward from the German government to realise its ambition to reach its GHG reduction target. Within the CAP 2020, BMUB (2014c:27) also clearly noted that embedding its climate policy in European and international agreements and legal obligations followed Germany's national preferences. Also, as can be found in Table 20, BMUB explicitly stressed the importance of EU-ETS reform in German climate governance.

In 2015, a supplementary measure for reducing GHG emissions in the electricity sector was made in the *White Paper on the Electricity Market and the New Climate*

Policy Instrument by BMWi. In the White Paper, a new concept of ‘climate contribution’ is introduced, which will mainly target the most inefficient coal/lignite plants (older than 20 years) and will come into force in 2017. The measure comprises several steps as follows (Sandbag, 2015:3; WWF & Germanwatch, 2015:6):

- The power plants with the age from 20 to 40 beyond will receive free allowances equal to 3 MtCO₂ to 7MtCO₂ per gigawatt (GW), which are the thresholds set to limit both their emissions and electricity production.
- Once a power plant's emissions exceed the assigned threshold, additional certificates have to be purchased at a price of €18 to €20.
- Emissions that exceed the threshold will also cost additional allowances, which will then be retired from the market.
- The new measure will only affect 10 per cent of German fossil fuel generation from plants that are older than 20 years, which are mainly the lignite-fired plants.
- Based on BMWi's calculation, the expected influence of ‘climate contribution’ on the electricity price will be +2 Euro per Megawatt hour (MWh).

From the emissions reduction and the EU-ETS point of view, if power plants exceed the threshold under the ‘climate contribution’, the additional EUA that has to be purchased will be removed from the market, which will decrease the total amount of allowances in the market. This can guarantee that there won't be additional emissions somewhere else. If the power plants' emissions do not exceed the assigned threshold, then this can cut GHG emissions in the energy sector under the EU-ETS without changing the EUA supply. Therefore, it seems that the German government intends by this new measure to bridge improving domestic energy efficiency and reducing emissions in the electricity sector. But from the policy analysis point of view, the adoption of the ‘climate contribution’ may be the strongest evidence that EU-ETS implementation has not only influenced Germany's climate governance but also led it to further integrate its climate policy into the EU's climate governance.

Conclusion

To conclude, in Germany's EU-ETS implementation, apart from the surplus of EUAs and under-valued carbon price, the major problem has been potential conflicts between EU-ETS implementation and national plans for climate and energy governance. Those national policies that contain implicit carbon price signals tend to distort the EUA price and may even lead to double regulation or gaps between ETS-sectors and non-ETS sectors. The inconsistent carbon price signals in Germany's climate policy mix may further weaken the expected economic incentives that EU-ETS can provide for its GHG reduction. At the same time, in Germany's macro-economy and its industries, the carbon price has greatly influenced the economic players' decision-making, whether in their short-term business management or in their long term planning for technology investment and upgrades (Perthuis and Trotignon, 2014). The conflicts between the EU-ETS implementation and national plans may threaten Germany's competitiveness in its EGS share and its leading role in green technology. Therefore, no matter whether from the point of view of politics, economy or technological progress and productivity gains, correcting the inconsistent carbon price signals and coherence of the EU-ETS with other national plans is crucial and necessary for Germany. Whether Germany can fulfil its climate goals firmly depends on successful GHG emissions from its sectors under the EU-ETS (Morris, 2013).

Following the latest climate policy and new measures adopted and released by the German government, a synergy has emerged between German national climate governance and its EU-ETS implementation, and that synergy is expressed in the CAP 2020 and its new climate measure, i.e. the 'climate contribution'. Both of these have shown that further embedding the German climate policy into the EU's climate policy fits its national preferences and position, in which Germany has actively set out to influence the EU-ETS revision at EU level. The meaning behind the latest trends is that Germany is no longer a laggard toward the EU-ETS. Instead, Germany has transformed into a proactive actor with stronger ambition to influence EU-ETS revision. Therefore, in the German case, EU-ETS implementation has indeed influenced Germany's national preferences, which is reflected in changes in its national climate governance. More importantly, EU-ETS implementation in Germany has also significantly changed its attitude toward EU-ETS revision.

Chapter 6 Case Study: Poland

- From a strategic laggard to a 'governmental veto player' by the means of 'Polonisation'?

Introduction

This chapter will use Poland as the final case study. The structure is still based on the analytical structure set out in Chapter 3 (Page 89). For the purpose of identifying and defining how the problem of GHG emissions looks in Poland and why, the first section will trace the historical GHG emissions. After the problem has been defined, how the Polish government reacted to it will be assessed, in which the observation will be focused on the major actors in and features of Poland's climate governance. Of course, the climate commitments pledged by Poland will be also put into the investigation, in which the Polish national preferences and intentions can be identified from the contextual factors in the inherent energy-economic structure. Secondly, this chapter will go on to pick out Poland's major GHG emitters and ask what might be the reasons for them being the biggest emitters. Before assessing the EU-ETS implementation in the Europeanisation stage (2000-2007) in Poland, several crucial components that contribute to (or even dominate) Poland's understanding of how to tackle climate change in its transition status are discussed. Then the process of investigating how Poland acted and reacted to the EU-ETS in the Europeanisation stage is undertaken.

Thirdly, in the section on the Centralisation stage (2008-2012) of the EU-ETS, the focus will be put on analysing how and why Poland changed from being a policy-taker to actively 'uploading' its national preferences when negotiating the EU-ETS revision at EU level. Then the implementation of the 2nd phase of EU-ETS in Poland will be examined to find out how EU-ETS implementation further affected (reinforced) Poland's preferences and strategy to meet its climate targets in transition. Fourthly, in the Reconciliation and integration stage (2013 to the present), the first half of the discussion intends to find out whether the national preferences formed by Poland may demonstrate a synergy (or conflict) brought about by EU-ETS implementation. Then the second half will focus on how Poland may attempt to affect EU-ETS revision at EU level and what 'Polonisation' means in Poland's climate governance. The chapter closes with the conclusion.

Before further examining the Polish case, the core concept of the transition status from its historical background needs to be unpacked, as it binds every aspect in Poland together, including politics, technology, economy and society. The starting point can be traced back to the collapse of the Soviet bloc in 1989. The following year, the Solidarity-led coalition government emerged and anti-communist ideas spread widely among the CEECs. As the first transition country to enter the EU, Poland's Solidarity-led coalition government started a series of reforms, which entailed a complicated institutional, structural, and behavioural change in society (SOFRACI, 2011). Through application of the "Washington Consensus"⁴³ and cooperation with international organisations (e.g. IMF, World Bank), Poland's macro-economy experienced "shock therapy," which was reflected in its economy's recession. Once this transition had started, Poland's GDP declined drastically, falling by approximately 18% from its 1989 level (Jankowski, 2007). Also during the transition, unemployment rose to over 13% in 1992 (Balcerowicz, 1995). Even in recent years, Poland is still trying to recover every aspect of its society from these shocks experienced during the transition.

Instead of leaving society to deal with the shock therapy administered by the economic recession, the 'gradualism approach' advocated that the Polish government should intervene in the liberalisation, privatisation, and, more importantly, stabilisation of the transitional economy (Marangos, 2003; SOFRACI, 2011). SOFRACI (2011: 212) argued that those transitions without mature and stable institutions, where neither economic nor legal system existed, were not actually suitable for the "Washington Consensus" approach.

Apart from the mis-use of "shock therapy" by the Polish government, when Poland adopted the *Association Agreement* in 1991 and later joined the EU in 2004, the policy and directives from the EU have been affecting Poland's transition both widely and deeply. Following the *Community acquis* (aka *acquis communautaire*)⁴⁴ a large

⁴³ 'The Washington Consensus' contains 10 economic policy prescriptions provided by Washington, D.C.-based international institutions (E.g. International Monetary Fund and World Bank). It is considered to be the "standard" reform package promoted for developing countries (especially crisis-wracked developing countries in transition).

⁴⁴ Put simply, according to the EU treaty, it means that new accession countries

amount of the transition and restructuring process in Poland should have also harmonised with EU laws, directives, and regulations. However, the large volume of new legislation need also created a huge burden on the Polish parliament and, thus, many fields temporarily remained unregulated (Millard, 1998). According to a World Bank calculation in 1997, the total cost just for Polish industry to comply with EU standards reached \$21 billion, although there was plenty of aid from the EU and other international organisations (Andersson, 1999). Following the argument from SOFRACI and the calculation from the World Bank, it may be stated that entering the EU made Poland's transition even more complex, and this made Polish government intervention necessary in order to prioritise all the tasks in its transition under the EU's framework.

Because of the *Community acquis*, the environment and energy conservation policies of the EU were also introduced into Poland's legal system. Concerned about air pollution and seeing the clear preferences of the EU for using emissions trading since 2003, Poland decided to adopt the emissions trading approach after a detailed investigation in 2003–2004 of the possibility of its functioning in Poland (Jankowski, 2007). As in other transition countries, a significant decrease in GHG emissions accompanied the shock therapy in Poland, with a reduction of over 20%, from 564 million metric tons of CO₂e in 1988 to 390.2 million metric tons of CO₂e. Without taking further action, Poland had already met its commitment under the KP before 2010 (IEA, 2011).

Compared with the Kyoto targets, Poland has greater difficulty in fulfilling the EU's climate targets before 2020. This is because hard coal and lignite have accounted for 90% of primary energy use in Poland since 1990. Even in 2009, coal retained an 89.5% share of primary energy production and over 70% of consumption in Poland (Gurgul and Lach, 2011). So 80% of CO₂ emissions in Poland were from its energy sector, especially the heat production and electricity sectors, which is undoubtedly due to Poland's reliance on coal (Böhringer and Rutherford, 2013). After the CEP was enacted in legislation in 2009, the conflict between Poland's preferred energy-economic structure and the EU's climate governance became intense. In 2013, former Polish Prime Minister Donald Tusk reaffirmed that the future of Polish energy would be in brown and black coal (Ottery, 2013). Under these circumstances, how Poland reacts

are required to transpose and adopt the rules used by the EU-15 into their domestic legal system. The details can be found in chapter 2.

and further affects EU-ETS implementation and revision then become more important. In order to meet the 20-20-20 targets but also stick with its preference of using coal to grow the economy, Poland then had to readjust both its climate policy and energy policy. So it is safe to foresee both that GHG reduction will be unavoidable and that very soon it will become a more difficult task for Poland to face (World Bank, 2011). And if Poland continues to rely on coal, then this will cause further conflict between its domestic preferences and the EU's climate targets.

6.1. Problem Identification and Definition: GHG Emissions in Poland

Poland has long been known as an opponent of ambitious climate targets and policies from the EU with the justification of 'the different economic situation from other MS'. For Poland itself, the different economic situation can be divided into several contextual factors. Firstly, as in the two case studies assessed before, structural changes also happened in Poland, in this case, the transition from Communism to a market economy and its accession to the EU (Skjaeseth, 2014). With the need to convert itself from communism to a market economy, two things reflect the Polish government's preferences: economic growth with a process of industrial modernisation, and highlighting its GHG emissions reduction from the structural transition as its major contribution to the EU. While endorsing this view, Sandbag (2014:3) also pointed out that Poland's economy has already become 7.5 times larger than it was in 1988 (the base year under the KP). In the meanwhile, there is a decoupling of economic growth from emissions, with carbon intensity dropping by 90%. In other words, continuing to oppose the climate targets and policy on the basis of its so-called 'special need from being a transition country' has become gradually less convincing to other MS. But according to projections made by the World Bank, the cost in output and employment that Poland will be required to pay to reach its targets under the 20-20-20 is indeed higher than the average of other EU MS (Jorgensen and Kasek, 2011). Aleksandrea from Sandbag (2015) further argued that this is due to its ageing energy infrastructure and coal-reliance rather than the targets and regulations from the EU's CEP and 20-20-20 target. Thus, Polish politicians unavoidably started to perceive EU's climate and energy policies as obstacles to securing Poland's economic competitiveness and growth both in the EU single market and the global market (Karaczun, 2011).

The second crucial contextual factor that affects Poland's attitude to the EU's climate governance, especially the EU-ETS, is its energy-mix with the feature of coal-reliance, which is also directly linked to Poland's energy-economic structure

(Livingston, Bochniarz and Bolan, 2007; ESMAP, 2009; Karaczun, 2011; Greenpeace, 2013; Boehringer and Rutherford, 2013). According to the ESMAP report (2009) and Greenpeace (2012), over 90% of electricity in Poland is generated from coal and lignite, which makes Poland more than twice as energy-intensive as the EU as a whole. Also, Poland has been recognised as one of the world's largest coal producers and consumers (Guurgul and Lach, 2011:2088).

Another factor that makes the energy intensity problem even worse is the inefficient and ageing infrastructure in the energy sector. As a result of ageing and inefficient power infrastructure, Poland is ranked as the 4th largest GHG polluter in Europe with 387 MtCO_{2e} emissions in 2012 (Sandbag, 2014). Besides, the need to stabilise its electricity price under its 'most reliable' source with state aid reduces the speed of electricity market opening and modernisation. Especially after experiencing the Russia-Ukraine disputes and crises in 2006, 2009 and 2014, the concern that reforming Poland's energy-mix (to reduce coal-use) might increase its energy dependence on Russia has emerged and highlighted the issue of energy security when applying either climate or renewable energy policies (Skjaeseseth, 2014).

With the first and second contextual factors, it is clear that Poland has tied its coal-reliance up tightly with its energy security and economic growth needs when drafting policies or establishing its position on tackling climate change. In these circumstances, it is not surprising that Poland's position and attitude toward climate policies from the EU remained oppositional. Because, from Poland's perspective, ambitious climate targets and policies might not only undermine its national energy security but also jeopardise its economic growth. Therefore, when assessing how Poland reacts to and acts in EU-ETS development and implementation, it is necessary to take these contextual factors into consideration and analyse their different influences at each stage. As explained in chapter 3, this chapter intends to find out how the development and implementation of the EU-ETS have affected these contextual factors, which inform the state's position and priorities during negotiations at EU level.

6.1.1. Economic structure, historical GHG emissions and climate governance in Poland

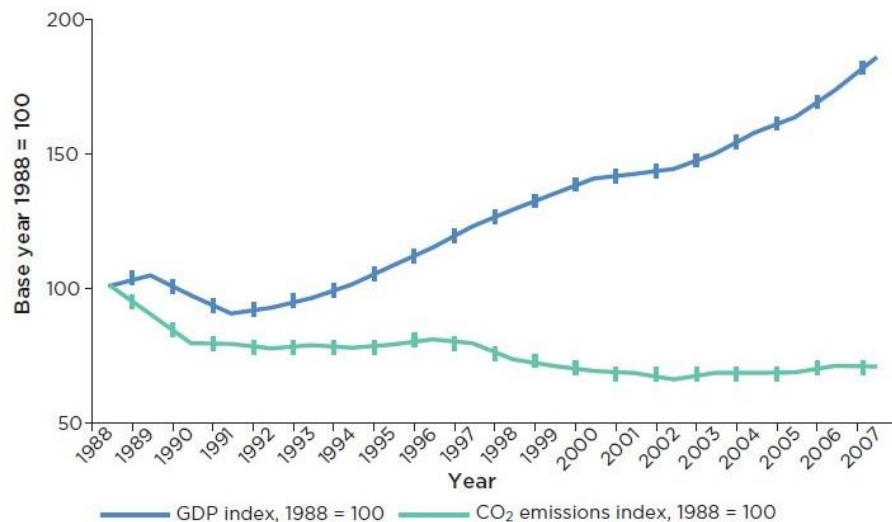
A. Economic Structure and Historical GHG emissions

According to statistics released by the World Bank (2016), Poland's economy was the 7th largest economy in Europe and the 22nd largest in the world in 2015. Of the former Eastern Bloc countries, Poland's economy remained the largest (Economist, 2011). Before the collapse of the Soviet bloc, Poland had been the key engine of industrialisation of the Soviet Union, which largely depended on its heavy industry (Jankowski, 2008). This may have resulted from the Polish energy mix, which is heavily reliant on fossil fuels, especially coal and lignite. Therefore, once the Soviet bloc collapsed and Poland entered a series of structural transformations in 1990, such as economic liberalisation and privatisation of small and medium state-owned corporations, GHG emissions in Poland started to fall sharply (World Bank, 2011; Dreblow et al., 2012).

According to the Sandbag report by Morris (2014), by 2012 the Polish economy had increased in size by 7.5 times (compared with its size in 1988), and GDP had climbed to 490 million US dollars. As shown in Graph 27 on the next page, there is a clear decoupling trend between GHG emissions and GDP growth in Poland. This decoupling can be attributed to industry restructuring and the closure of inefficient power plants during this period (Greenpeace, 2013). So, although Poland's GDP almost doubled from 1988 to 2008, its GHG emissions were reduced by roughly 30%, without applying any further climate policy but simply relying on the 'transition'. Furthermore, Poland is the only state in the EU which avoided the economic recession during the 2008 and 2009 period, achieving economic growth of 1.7 per cent in 2009 (Pleitgen and Davies, 2010). This was due to structural change in the economy, which switched from manufacturing to the service sector. According to figures from Economy Watch (2010), the service sector in Poland contributed 67.3% of total GDP, while the agriculture and industry sectors contributed 4.6% and 28.1% respectively.

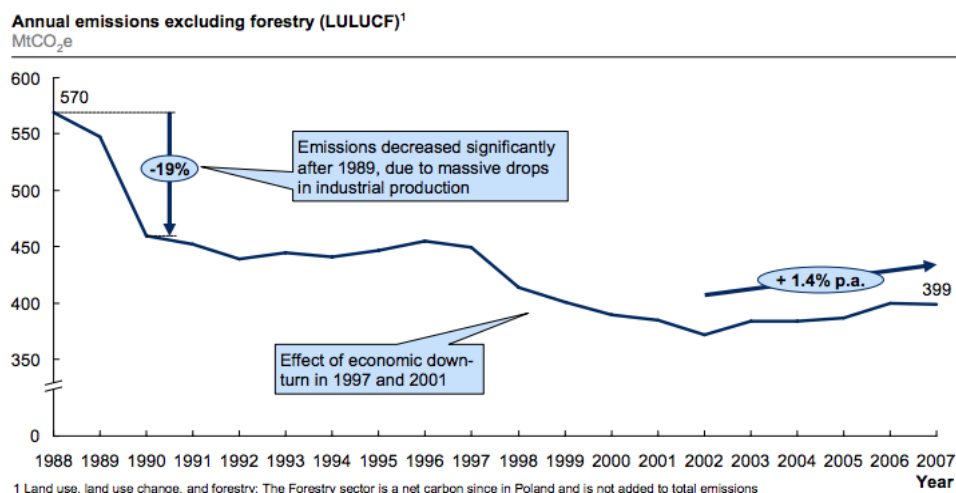
Because of its status as a country in transition, while its economy was booming, the development of GHG emissions reduction and climate governance in Poland has its special features within EU. As shown in Graph 28 on the next page, the country's overall GHG emissions decreased by 19% before 1991. By 1994, total GHG emissions had fallen by 20% (Egert, 2012). After that, GHG emissions dropped another 10% by

1999, which was down to investment in more efficient industrial technology (ibid) and the effects of economic downturns in both 1997 and 2001. After that, GHG emissions in Poland remained generally stable. But starting from 2002 the economy grew faster, spurred by market liberalisation and, more importantly, by financial aid from international organisations (e.g. IMF, the World Bank). GHG emissions in Poland therefore increased by around 1.4% accompanying the economic growth.



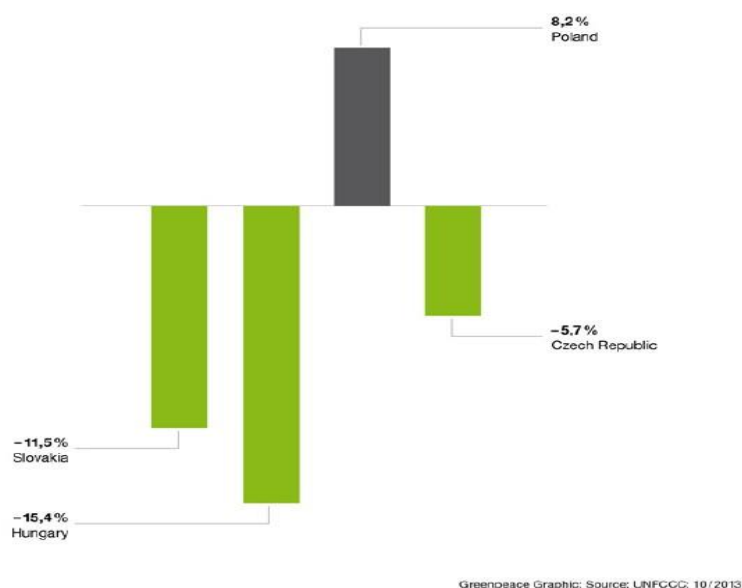
Source: World Bank, 2011.

Graph 27. Economic growth and GHG emissions in Poland: 1988–2008



Graph 28. Historical GHG emissions in Poland. Source: KASHUE; National Inventory Reports.

To summarise the above, before 2010 Poland did not take any further action on reducing GHG emissions but largely relied on the ‘co-benefits’ from its transition and industry restructuring to meet its commitment under the KP (Ministry of the Environment, 2003). Unfortunately, as can be seen in Graph 29, among the listed transition countries, Poland was the only one that increased its GHG emissions (by about 8%) after adopting and ratifying the KP in 2002.



Graph 29. GHG emissions change in selected transition countries from 2002 to 2011. Source: Greenpeace (2013:2)

Poland’s increasing share of GHG emissions is reflected in its climbing the ranking of top emitters within the EU. According to research done by Mizerny (2009), carbon dioxide accounted for 82% of all GHG emissions (398.88 MtCO₂e) in Poland in 2007, which made Poland the 6th largest emitter among the 27 MS in the EU. After that, according to the World Bank’s *Energy Sector Management Assistance Program* (2011), Poland became the 5th biggest GHG emitter and the least carbon-efficient in the EU. Based on Poland’s National Inventory submitted to the UNFCCC in 2011, almost half of the total 399.4 MtCO₂e GHG emissions were emitted by its energy sector (Dreblow et al., 2012). In 2012, with GHG emissions of 387 MtCO₂e, which is slightly lower than 2011, Poland was still the 4th largest emitter in the EU (Morris, 2014). Considering that the Polish government has already committed itself (in 2013) to maintaining the reliance on coal, it is safe to predict that the Polish government will face a very difficult task in finding ways to fulfil any climate targets (regardless of whether they are set by the EU or at global level).

B. The actors and features formulating Poland's resistance to climate change

In Poland, the trend of institutional strengthening in the domain of climate change emerged in the second half of the 1990s in response to the UNFCCC in the global setting, with actions such as establishing the Climate Protection Centre (which became the Climate Convention Executive Office) and the National Emissions Centre (Karaczun, 2011). However, these structural developments in the Polish government did not have significant influence on its domestic climate governance, and were not sustained either. At that time, the Ministry of Environment had the competence to carry out missions under the UNFCCC and the KP, which ranged from climate change actions to environmental protection and conservation. In the same period, a series of preparations for entering the EU also gave the crucial push not only to the legal system changes but also to the political system transformation. Since then, the EU has been a significant influence on Poland's climate and energy policies.

Later, in 2001, Leszek Miller won the election and led a coalition government formed by the Democratic Left Alliance (SLD) together with Labor Union (UP), and the agrarian Polish People's Party (PSL) (Table. 21 on the next page). As one of the pro-European governments, eager to comply with EU regulations (Szulecki, 2017), the Ministry of Environment in the Miller government initiated a draft for constructing the National Climate Policy (NCP), which was adopted in 2003, and noted Poland's position and preferred measures to contribute its efforts on tackling climate change. This represented significant progress achieved by the Ministry of Environment in developing policies on climate protection; however, with a lack of political will from other departments in the Polish government, the effectiveness of the NCP implementation remained low. Karaczun (2011:61) commented that 'the National Climate Policy has been a defunct document since the very beginning and has had no impact on other strategies and programmes developed in Poland.' Therefore, externally, this cornerstone of Polish climate governance can be seen as a diplomatic tool for Poland to fulfil its requirements under the UNFCCC and the KP. Internally, this shows how isolated and lacking in influence the Ministry of Environment of Poland was in the early 2000s.

In May 2004, Miller's cabinet was replaced by a new one formed by Marek Belka (still in Table. 21). Then the election in 2005 showed a large swing to the right, in which the centre-right Law and Justice party (PiS) won around 27% of the vote while its allies, the Civic Platform (PO), won around 24%. However, after the failure of coalition talks

with PO, PiS secured its government by signing a ‘stabilisation pact’ with Self-Defence (SRP) and the League of Polish Families (LPR). Mr Marcinkiewicz vowed to build a ‘strong and stable’ centre-right government. Only a year later, Marcinkiewicz was removed from his position and replaced by Jarosław Kaczyński. But, while the government changed from left- (pro-European) to right-wing (Euroscepticism) between 2001 and 2007, given that the limited action and domestic measures were taken by these governments, it seems quite clear that Poland’s climate policy remained a diplomatic tool for either negotiating with the EU or attempting to gain aid from international organisations. Even in 2008, while negotiating and formulating Poland’s position on the EU’s CEP and EU-ETS revision, the Ministry of Environment remained sidelined from the negotiations (Braun, 2014). The absence of comprehensive implementation of the NCP by other ministries, or action by industry, also reflects that climate change was still not an important concern in the domestic sphere (Dreblow, et al., 2012; Skjaereth, 2014).

Table 21. Polish government changes during EU-ETS development

Stage	Europeanisation	Centralisation	Reconciliation and Integration
Year	2002-2007	2008-2012	2013 to present
Government	Leszek Miller: 2001-2004 Marek Belka: 2004-2005 Kazimierz Marcinkiewicz: 2005-2006 Jarosław Kaczyński: 2006-2007	Donald Tusk: 2007-2014 Ewa Kopacz: 2014-2015 Beata Szydło: 2015-present.	
Coalition	UP-PSL: 2001-2004 UP: 2004-2005 SRP-LPR: 2005-2007	PSL: 2007-2015 None: 2016- [present]	
Attitudes	<ul style="list-style-type: none"> • A Diplomatic tool • A Threat to economic growth. 	<ul style="list-style-type: none"> • Oppose more ambitious climate targets or measures from the EU; • A ‘governmental veto actor’ 	

Actions	<p>Globe:</p> <ul style="list-style-type: none"> • Adopted the KP in 2002. • Joined the EU in 2004. 	<p>Globe:</p> <ul style="list-style-type: none"> • 2011: Centre for Climate Policy Analysis (worked with world Bank); • 2013: Polish Ministry of Economy hosted the International Coal & Climate Summit (ICCS) in Warsaw. • 2013: COP 19/ CMP9 of the UNFCCC in Warsaw.
	<p>Domestic:</p> <ul style="list-style-type: none"> • The NCP in 2003 • The PCP2020 in 2003 • The ETA and EMA adopted in 2004 (internalised the EU-ETS into domestic legal system). 	<p>Domestic:</p> <ul style="list-style-type: none"> • National Environmental Policy (NEP) (2008) • Green Effort Group (G-6) in 2009. • Polish Energy Policy of Poland until 2030 (EPP 2030) and its Poland Action Plan for the years 2009-2012 in 2009. • Act on Management of GHG Emissions and Other Substances in 2009. • National Development Strategy 2020 (NDS) in 2012. • Strategy on Innovation and Efficiency of the Economy (2013) • National Strategy for Adaptation to Climate Change (SPA) 2020 in 2013. • Strategy on Energy Security and the Environment (ESE) in 2014. • Renewable Energy Act in 2015.
Major government department	<p>Ministry of Environment;</p> <p>Ministry of Economy;</p> <p>Ministry of Infrastructure</p>	<p>Ministry of Environment;</p> <p>Ministry of Economy;</p> <p>KASHUE (before 2008); NAETS;</p> <p>KOBiZE (since 2009)</p>

Within the Ministry of Environment, the Department of Climate Change and Atmosphere Protection was assigned responsibility for the rules of allocating EUAs in the EU-ETS and the JI projects in Poland. Apart from this, several agencies under the Ministry of Environment are involved in climate policy development and implementation under the UNFCCC, the national inventory and the national registry of GHG emissions, such as: the Institute of Environmental Protection, the National Administration of the Emissions Trading Scheme, and the National Centre for Emissions Balancing and Management. When it comes to the financing of environmental protection, the competence lies with the National Fund for Environmental Protection and Water Management (NFOSiGW), which is one of the units under the Green Investment Scheme (GIS) (IEA, 2011). Apart from the Ministry of Environment, the Ministry of Economy is involved specifically in climate policies and strategies regarding the power, heat and industry sectors, while the Ministry of Infrastructure takes responsibility for environmental and climate policies in both the transport and construction sectors. But generally, the most important ministries with regard to climate and energy policies are the Ministry of Environment and the Ministry of Economy (Skjaereth, 2014). However, most of the time, the continuity of resisting climate targets and policies from the EU and supporting conventional coal has been sustained by ministers.

Apart from the governmental actors, there are several non-governmental actors and organisations with the goal of tackling climate change in Poland. The Climate Coalition was formed in 2002, and included the Polish Ecological Club and the Institute for Sustainable Development. However, as Braun (2014) observed, the Climate Coalition in Poland was quite undermined as the Ministry of Environment itself had limited involvement and influence in the government's policy-making and agenda setting. In other words, access for lobbying and influencing climate policy-making in Poland was still under-developed, whilst the issues of tackling climate change and reducing GHG emissions were not at the top of the Polish priorities.

However, when it comes to industry (especially the electricity sector and coal mining sector), the scale of the influence in the policy-making process shows a significantly different situation. As a transition country with an energy-intensive economy and coal reliance, after Poland experienced a sharp drop in GDP and an increase in the unemployment rate, the Polish government started providing support to its coal sector under the pressure from the industry and public. In 2003, the Polish

government slashed from its government budget over €4 billion that the coal sector would have had to pay (Karaczun, 2011). According to the Warsaw Institute for Economic Studies (2014), the mining sector alone cumulatively received PLN 135.944 billion (€32.368 billion) government subsidies between 1990 and 2012. Greenpeace (2014) argued that giving this huge amount of state aid and ignoring external costs kept Poland's inefficient coal-based energy system alive. This situation not only increased the unwillingness of industry (especially the coal mining sector) to make changes in the Polish energy-mix and energy policies but also formed a consensus between government and the coal industry to stand up for coal use.

Among all industries, the Polish Electricity Association (hereafter: PKEE), which was set up in 1997, has gradually become more influential, as it is made up of and supported by the largest Polish power companies and the leading organisations operating in the industry. The main objective of the PKEE is to pursue the interests of the Polish electricity industry in a modern market economy. To do so, the PKEE has actively engaged in negotiating over projects and measures that affect the electricity industry. Since Poland started internalising the *Community acquis* and officially joined the EU in 2005, the PKEE has been involved in cooperating with the Polish government and representing the interests of the Polish energy and coal sectors in both Warsaw and Brussels. However, considering the compulsory implementation of the EU-ETS in 2005, the PKEE, as the major target group of the EU-ETS, did not show active involvement until recent years (PKEE, 2012; 2013; 2015; 2016). In 2014, PKEE became a member of the Central Europe Energy Partners (CEEP) and officially opened an office in Brussels in the same year, showing the clear intention to directly lobby EU institutions (PKEE, 2014). Furthermore, since the PKEE became a full member of Eurelectric,⁴⁵ it has enthusiastically cooperated with Eurelectric to participate in lobbying, discussion and negotiation with EU institutions for uploading and advocating Polish opinion and preferences on the EU-ETS to both Eurelectric and EU institutions, such as the Parliaments and its ITRE and ENVI committees (PKEE, 2016). Although these commentaries from the industry were supplementary to the negotiating and policy-making process, the actions taken by the PKEE can be interpreted as a turning point and also a reaction from Polish industry to regulation under the EU's climate

45 Eurelectric is the electricity sector association that represents the common interests of the electricity industry at pan-European level.

governance.

Another group of actors with responsibility for EU-ETS implementation that has been exerting influence and pressure directly at EU level since 2009 is the Green Effort Group. The Green Effort Group is also called ‘G-6’, which refers to its components: 4 of the largest Polish power utilities⁴⁶ and 2 associations established by 13 trade industrial organisations (Karsczun, 2011). It is believed by scholars and observers that the industry lobby formed by G-6 made a major contribution to weakening the ambition of the CEP design in 2008 and shaped it to be more acceptable to the Polish government and economy (Karsczun, 2011; Braun, 2014). Compared with the PKEE, the influence of the Green Effort Group in direct lobbying at the EU level is much clearer, which is down to its membership being supported by the major companies in the Polish energy market (Skjærseth, 2014). Given these observations from Poland, Skjærseth (ibid) considered this trend of non-governmental actors becoming more actively involved in influencing policy-making at both of the national and the EU level as being in line with MLG assumptions.

C. The climate commitments in Poland

As suggested by the analysis Egert did for the OECD in 2012, and OECD (2012), Poland does not have any direct climate change policy. Until the beginning of 2003, for the purpose of fulfilling Poland’s commitment under Article 4(2) in the UNFCCC,⁴⁷ the Ministry of the Environment initiated and presented a draft of the National Climate Policy (NCP) (Karaczun, 2011; Ancygier, 2013; Nachmany, et al., 2015).⁴⁸ Later in the same year, “POLAND’S CLIMATE POLICY: the strategies for greenhouse gas

46 4 largest power utilities are: Polska Grupa Energetyczna S.A., Tauron Polska Energia S.A., Enea S.A., Energa S.A..

47 Article 4 under the UNFCCC, which is valid since the year of 2002, listed the details and guidelines for the parties to further set the climate commitments but shall also take the differentiated states’ situation into their consideration.

48 The author noticed that although the same legal text was analysed within these three studies for the same purpose of getting more understanding toward Poland’s climate policy development, there are three different terms were used. National Climate Policy was used by karaczun (2011). Ancygier (2013) used the term of ‘Polish Climate Policy’, and Nachmany, et al. (2015) used Climate Policy of Poland: Strategy to reduce greenhouse gas emissions in Poland until 2020 was used. After the comparison to the website of Poland’s Ministry of Environment, the country details website by the IEA, it is believed that that these three are all linking to the same legal text initiated by the Minister of Environment in 2003. So following the official English version provided by Ministry of Environment, the ‘POLAND’S CLIMATE POLICY: the strategies for greenhouse gas emission reductions in Poland until 2020’ is used here.

emission reductions in Poland until 2020” (hereafter referred as the PCP) was adopted by the Council of Ministers. Within it, Poland pledged to eliminate 40% of its total GHG emissions by 2020. However, without setting out more details of measures to be taken afterwards, the PCP became defunct and served merely to fulfil the UNFCCC obligation on the surface. Moreover, combining this with the historical GHG emissions trend as unpacked above, this first national climate commitment of a 40% reduction in GHG emissions by 2020 shows a clear national preference for setting the least onerous climate target. For a transition country, which had already achieved a 30% GHG emissions reduction by 1999, Poland was only willing to set its mind to reducing GHG emissions by another 10% within two decades.

Poland adopted the KP in 2002, which is four years after the EU’s BSA, so Poland was eventually excluded from the BSA. Considering the special need for both economic and political transformation in the transition countries (including Poland), the Parties to the KP had agreed to make concessions by allowing them to choose a base year other than 1990 and granting generous reduction targets (Morris, 2014; Nachmany, et al., 2015). So, under the KP, Poland needed to reduce its GHG emissions to 6% below its base year (1988) level during the period of 2008–2012. To some extent, the concessions for transition countries can be also regarded as an exchange for their involvement in and support for the first global binding climate targets and the associated regime. Therefore, Poland strategically selected the year 1988 instead of 1990 for two important reasons (Morris, 2014; Nachmany, et al., 2015): (i) it was the last full year of Communist rule in Poland, before any ‘shock therapy’ from transition; and, crucially, (ii) it was the year that Polish GHG emissions were at their highest level. Within two years, GHG emissions fell by 19% because of the ‘shock therapy’. Therefore, looking at Poland’s Kyoto commitment in a more conventional way, after selecting 1988 as its base year, Poland is allowed to ‘increase’ its GHG emissions by 16% compared to its 1990 level (Morris, 2014: 6).

According to the IEA’s assessment (2011) and the OECD Economic Surveys (2012), like many other transition countries, Poland’s total GHG emissions (excluding the Land Use, Land-Use Change and Forestry, LULUCF) were much reduced, to 30% below the 1988 level in 2007. In other words, Poland had already met its Kyoto commitment even before the start of the compliance period. Thus, from Poland’s point of view, the meaning behind ratifying the KP may not be limited to showing its willingness to actively participate in tackling global GHG emissions. More explicitly,

ratifying the global climate target actually suited Poland's national interest even in the new arena of tackling GHG emissions. At the time of ratifying the KP, Poland was still in the process of negotiating accession to the EU. According to article 25 of the KP, only when over 55% of the Annex I parties (mainly the developed and transition countries) ratified the Protocol would it be legally binding. Thus, since the EU has played the 'bodyguard' and been a powerful advocator of the KP, adopting the KP is also an action that shows Poland's recognition of the EU's core value of tackling climate change. Andersson (1999) also argued that, after joining the OECD in 1996, in order to gain recognition at the EU and global levels, Poland needed to put greater emphasis on its environmental policy reform. On other words, by ratifying the KP and working on its environmental policy, Poland would gain economic support for its transition and political recognition from the EU, whilst the EU would get Poland's support to secure the KP (Morris, 2014).

Following the discussion above, a link can be found between three essential bargaining tools: (i) the transition country status; (ii) the 'contribution' to GHG reduction from the 'shock therapy', and (iii) the core interest (the right to pursue economic growth) that Poland repeatedly applied in climate negotiation. Therefore, from Poland's point of view, there are two points here that are noteworthy: (i) tackling GHG emissions reduction is seen as a potential obstacle to pursuing economic growth, i.e. an economic issue rather than an environmental issue; and (ii) as a transition country which had just come out of the Soviet bloc, it was never a problem for Poland to fulfil its target under the KP, but it was an ideal opportunity to obtain more support, both political and economic.

Afterwards, when the *CEP* was adopted in 2008, coming into force in 2009, the so-called '20-20-20' target for the compliance period of 2013-2020 was confirmed. As a member state of the EU, Poland is also bound by these commitments because of the *Community acquis*. All these translated into Poland's national commitments (IEA, 2011: 38) as follows:

- Limit GHG emissions in sectors not covered by the EU-ETS to 14% above the 2005 level [legally binding];
- Reduce energy consumption by 20% of projected 2020 levels;
- Increase the share of renewable energy to 15% of gross final energy consumption [legally binding].

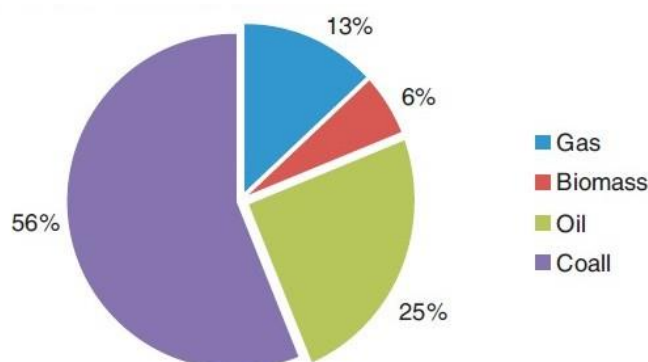
The first of these commitments means that the non-ETS sectors of Poland are allowed to increase their emissions by 14%, while the ETS sectors in Poland need to fulfil the EU emissions reduction of 21% from the 2005 level. Thus, in Poland, under the '20-20-20' targets, the emissions reduction burden will be heavier in the ETS sectors than in the non-ETS sectors.

For both the Polish government and its public, the climate change issue and GHG emissions reduction are not at the top of the list of priorities. On the one hand, as Jamkowski (2007) argued, the majority of the Polish public think that the significant drop in GHG emissions that accompanied their transition and economic recession has already fulfilled Poland's responsibility to reduce GHG emissions in the EU. Therefore, under the legally binding targets received from the '20-20-20', it is not surprising that Poland has started showing even stronger resistance to the EU's climate targets and policies since 2008.

6.1.2. The Linkage between GHG emissions and energy-mix in Poland

A. Coal and lignite: from the communist heritage to the crucial component of Poland?

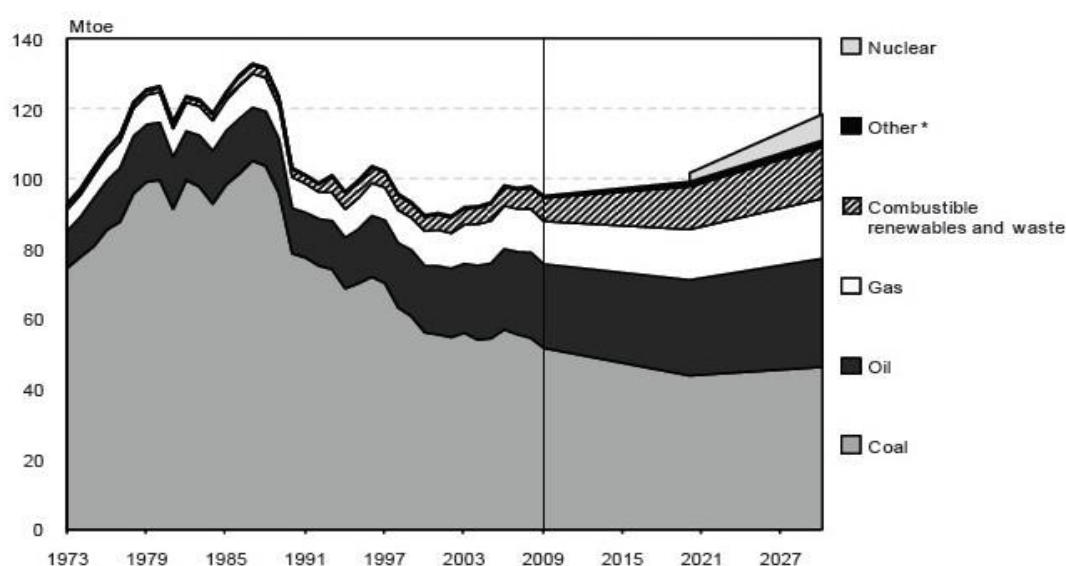
Having been the key engine of industrialisation of the Soviet Union, Poland had largely depended on its heavy industry and suffered severe environmental degradation (Jankowski, 2008). This also led to the energy mix of Poland being dominated by coal and lignite. So the major characteristic of Poland's primary energy sources is its heavy reliance on fossil fuels, i.e. coal, oil and gas, which made up 94% of Polish primary energy demand, according to the Ministry of Economy, in 2011 (Graph 30). Among fossil fuels, coal has had the biggest share - 56% even in 2011.



Source: Energy Mix 2050. Analysis of Scenarios for Poland. Ministry of Economy 2011, page 7.

Graph 30. The demand for the primary energy by sources in Poland

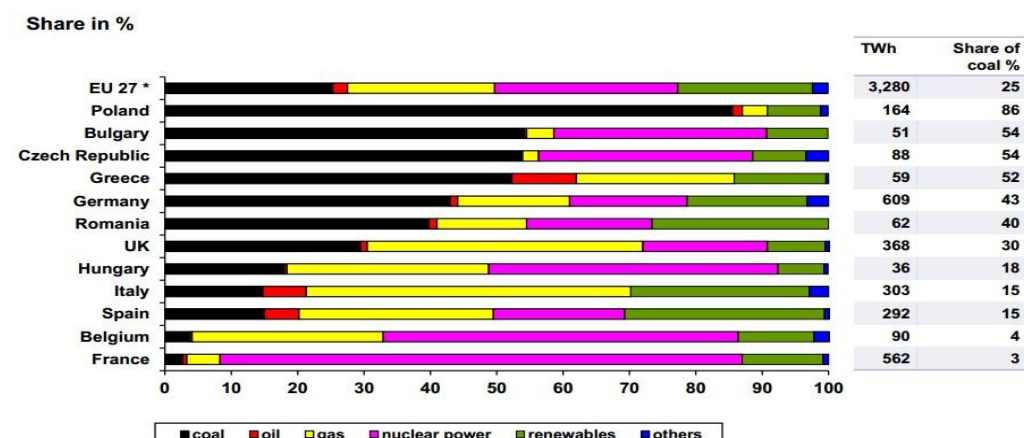
Referring to the projected total primary energy supply by sources from 1973 to 2030 in Graph 31 on the next page; coal reliance has existed in Poland for more than two decades, even after the collapse of communism. After the political turbulence following the collapse of the centrally planned economy and communism in 1989, the total energy supply of coal fell sharply. During the economic recession between 1989 and 1991, the Polish government closed down many inefficient plants and polluting factories, started improving efficiency and promoted environmental conservation. Although the economy gradually recovered after 1991, the ‘economic shock therapy’ continued to reduce the total energy supply (Meyers, et al., 1994; NRG Expert, 2011). After that, with the transition process and signing the accession agreement to join the EU, the Polish government focused on energy mix reforms through legislation and energy market liberalisation, which made its energy mix slightly more balanced. Because of market liberalisation and financial aid from international organisations, the Polish economy started growing faster in 2002. The booming economy was also reflected in an increase in coal use. It seemed entering the EU and ratifying the KP did very little to inhibit coal use. As shown in Graph 31, there was a drop after 2007, when the ‘20-20-20’ policy was adopted by the Council. Then a decreasing trend started from 2008, which was also the year that CEP was in negotiation. However, the situation of heavily relying on fossil fuels did not change until 2009, at which time around 93% of primary energy supply came from fossil fuels, of which only about 25% and 13% were from oil and gas respectively. It is generally believed that coal use will continue to be heavily relied on in Polish energy-mix.



Graph 31. The total primary energy supply by source in Poland, 1973-2030

*Other: includes hydro, wind, geothermal and solar. Sources: Energy Balances of OECD Countries,

Then, Graph 32 shows that 86% of power in Poland was still generated from coal (in 2011). This was much higher than the rest of the countries, and even 31% more than the second highest member state (Bulgaria). In Europe, Poland sustains the highest dependence on coal as its primary energy source. And with the heavy reliance on coal and lignite in its primary energy use, carbon intensity in Poland is undoubtedly relatively high (Sitnicki, et al., 1991).



Graph 32. The Structure of power generation in selected MS in the EU: 2011. Source: Eurocoal (2013)

One of the crucial reasons for Poland's coal-reliance can be found in the concern of national security, since Poland possesses extensive coal reserves, such as the Lower and Upper Silesian Basin, and the Lublin Basin in southern Poland. These extensive coal reserves can keep Poland independent in energy supplies. According to the IEA's review, the estimated reserves are 12.65 billion tonnes, with a further 164.66 billion tonnes of resources (IEA, 2011). Since a country's economic growth depends on its access to energy, coal and lignite have been mined in large quantities and the Polish government has given top priority to supplying them to meet domestic demand and to exporting them for hard currency. This has caused one of the most serious cases of pollution, with the heavy industry belt of Upper Silesia becoming known as the '*black Triangle*'. As the Polish Prime Minister at the time, Donald Tusk, declared during the International Fair of Mining, Power Industry and Metallurgy in 2013, Poland will continue to back coal and invest in the coal-mining industry; and the future of Polish energy is in brown and black coal. This means that coal has been considered not merely as a key pillar of Poland's national energy security, it also secures and represents a major benefit to the substantial share of the population dependent on mining. It is

estimated that even since the industry was dramatically restructured after 1989, the population employed in the mining sector in Poland has remained over 130,000 (Skjærseth, 2014). In these circumstances, it is not surprising that Poland has been seen as one of the largest coal producers and consumers in the world (Sitnicki, et al., 1991; Gurgul and Lach, 2011). And it is also not surprising that there is stronger resistance to the EU's climate and energy policy in Poland.

B. Energy intensity, carbon intensity and energy security

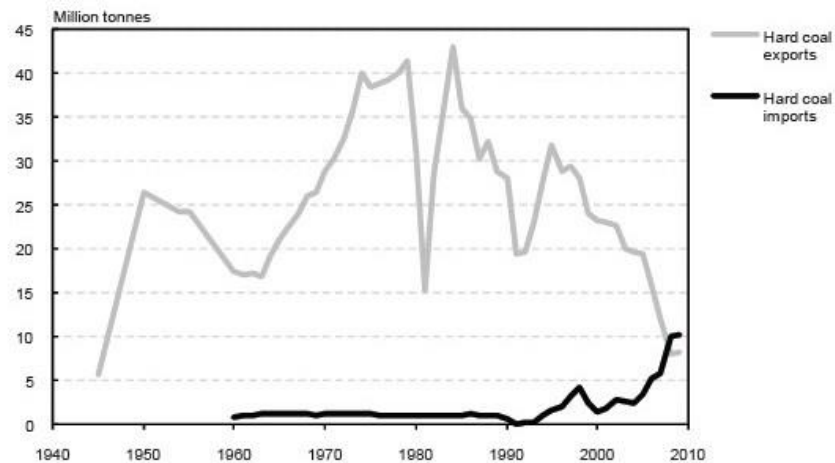
As mentioned before, coal has been considered and placed as a key pillar of Poland's national energy security and economic growth. But it also brings with it serious pollution and high carbon intensity in Poland. In 2010, according to McKinsey & Company analyses (2010), over 95% coal-generated power makes Poland one of the most energy-intensive EU countries. Despite the various improvements made during 1988-2000, even in 2007, Poland's energy intensity remained double the average energy intensity of the EU-27. This highlights that the Polish energy-mix maintained its low energy efficiency during the national economy's development. Decreasing the use of coal and increasing the reliance on oil and gas would help to change this but is not the only thing that the Polish government should be focusing on.

Another useful tool to analyse the energy-mix in Poland is carbon intensity, which, according to the definition provided by the World Wide Fund for Nature (WWF), is a measure of how much carbon economies emit for every dollar of GDP they produce. More precisely, Budzianowski (2012:576) defined carbon intensity as '*CO₂ emissions from fossil fuel combustion to the atmosphere per amount of energy*'. Poland had the second highest carbon intensity in the EU in 2005, only lower than Estonia (McKinsey & Company, 2010:6). The World Bank (2011: 30) argued that '*This high emissions-intensity of the economy is due partly to the high amount of CO₂ generated by the energy consumed but also to the high energy intensity of production in Poland.*' Two directions that are pointed out by the World Bank to resolve the problem of Poland's high carbon intensity are: (i) to replace carbon-intensive energy sources with less carbon-intensive energy; (ii) to improve energy efficiency during production.

To assess the possibilities of applying these two options, let us start with the first option (fuel-replacement) and investigate why this triggers the nerve that is called 'energy security' by the Polish government. According to the IEA's report (2011: 98&115), Russia was the largest external provider of both crude oil and gas, supplying

94% of Poland's total oil imports and 82% of total gas imports (11% was imported from Germany). Since natural gas exports usually rely on bilateral agreements, either between countries' governments or between national companies, increasing the natural gas dependence on Russia would not be a wise strategy for national energy security. Given that oil and gas combined met 38% of Poland's demand for primary energy in the same year (Graph 30 on page 209), further replacement of coal use with other fuels, might make Poland more reliant on energy imported from Russia, which is obviously seen as 'energy insecurity' for Poland. Although burning natural gas can reduce CO₂ emissions by about 43% per unit when compared with burning coal, it may not be worthwhile for Poland to take the risk of decreasing energy security. The possibility of using oil to reduce coal usage has a similar problem. Thus, with the help of these figures, the necessity of coal seems to be justified in the name of energy security.

However, as shown in Graph 33 on the next page, Poland has become a net importer of hard coal since 2008. Being a net hard coal importer means that domestic coal production was no longer sufficient to meet Poland's own domestic demand. In 2009, coal imported from Russia accounted for 70% of Poland's total coal imports (IEA, 2011:82). In 2010, imports of coal amounted to 13.4 million tons in Poland (EURACOAL, 2011). According to the official Polish Government Energy Policy Strategy, i.e. *Energy Policy of Poland until 2030*, which was adopted in 2009, coal will remain the key element of the country's energy security until at least 2030. With the set roadmap of relying on coal and given that Poland's economy has continued to grow quickly in recent years while its coal mining and production have declined since 2003 (Gurgul and Lach, 2011), it is certain that the need to import coal will increase, while coal production from domestic coal mining is decreasing. In these circumstances, reliance on coal may not be enough to maintain Poland's national energy security in its pursuit of economic growth.



Graph 33. Hard coal imports and exports in Poland: 1945-2009. Sources: Energy policies of IEA Countries-Poland (IEA, 2011:82)

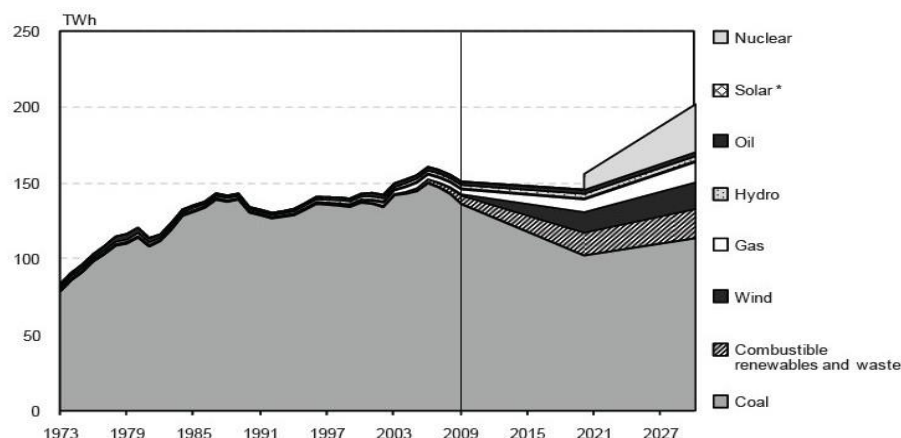
Following the restructuring process in Polish industry, the dependence on coal in industry has actually greatly decreased. But the reliance on coal-fired power generation in the electricity sector has remained. According to the IEA's record, 97% of electricity in Poland was generated from coal-fired plants in 1990. This percentage dropped by 1% in 2000, and by 2009 had fallen to 90% (IEA, 2011:63), but rose again to 92% in 2012 (Vorutnikov, 2014). After what Donald Tusk said in 2013 about the Polish economy being built on brown and black coal, it is believed that this ratio will keep climbing.

Another option would be the possibility of improving energy efficiency during production. However, another feature of Poland's energy sector that can partly explain the low energy efficiency (and also high carbon intensity) is the age of its coal-fired plants. According to Greenpeace (2012), 70% of Polish power plants are already more than 30 years old, 40% over 40 years old and 15% over 50 years old. These inefficient power plants make the problem of pollution from coal and other fossil fuels even worse. However, compared with the cost and the time that the Polish government would need to spend on decommissioning and replacing the ageing infrastructure in the Polish energy sector, it is easier and cheaper (for the Polish government) to stick to coal.

C. The electricity actors in Poland

Based on the ABS Energy Research Report (2004) and the World Bank report (2011), 90% of electricity generated in Poland comes from coal-fired plants. Also, over 99% of lignite is used in power plants to generate electricity and heat (IEA, 2011). As the historical record of Poland's electricity generation shows (Graph 34), coal has been

dominant for most of the time in the electricity generation history of Poland. Poland's reliance on coal only began to decrease after the development in recent years of renewables and waste. Also, according to the Polish government's projection, the first nuclear unit will not start functioning until the end of 2022 (IEA, 2010:66).



Graph 34. Electricity generation by sources in Poland: from 1973-2030. Source: IEA, 2011:63.⁴⁹

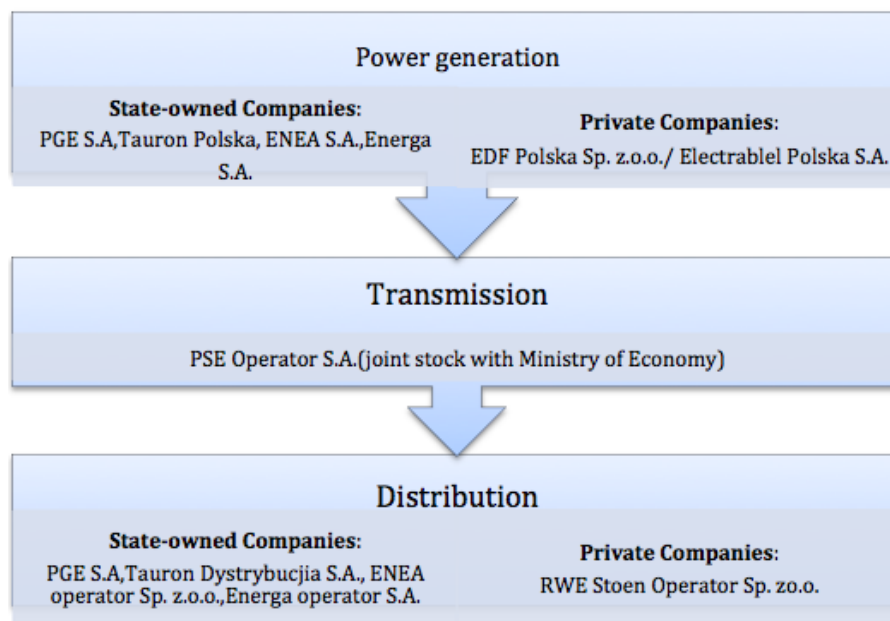
After the energy sector had been divided into three sub-sectors (i.e. generation, transmission and distribution) in 1990, the electricity sector did not enter the transition until Poland's new energy law came into force in 1997. Since then the structure of the electricity market has changed systematically. Not only were the state-owned companies gradually privatised, but also the companies started integrating vertically, i.e. distribution system operators (DSOs) owning generation and supply units.

The electricity market was not completely opened until 2007 (IEA, 2011). Before 2007, the state-owned company, Polskie Sieci Energetyczne SA (PSE), carried out the electricity generation. Only a few independent and private companies existed in the market. After 2007, based on IEA's calculation (2011), at least 100 companies acquired licenses to generate electricity and around 300 companies became authorised to supply power to end-use consumers. The structure of the electricity market in Poland can be seen in the Graph 35 on next page.

As can be seen at the top of Graph 35 (next page), most of the electricity generation in Poland is still controlled by state-owned companies. Then, in the transmission part,

⁴⁹ The available historical data are collected until 2009. The data from 2010-2030 are projected by Polish government.

the PSE Operator S.A, which is a joint stock company with the Ministry of Economy, has market domination of electricity transmission in Poland. But, it is noteworthy that for many operators in the distribution system, it is easy to find a vertical consolidation that can connect them to the actors in power generation. Most of them can be linked to the individual owners listed in generation companies. This outcome echoes Cullmann and Hirschhausen's (2008) observation that privatisation in Poland has been unsuccessful. More explicitly, the structure of the Polish electricity market has remained unchanged and been far from an open and free market since 2008.



Graph 35. Electricity market structure in Poland.

However, for a market-based instrument like the EU-ETS, intended to stimulate the reduction of GHG emitted by electricity production, without an open and free electricity market in which the electricity price can reflect the cost of production, the economic incentive for investment in energy efficiency or green technology may be limited. For this reason, the 'misfit' between the Polish electricity sector and the EU-ETS is partly due to Poland's electricity market itself. Therefore, although there has been a slight decrease in coal-fired electricity generation, mostly offset by the increase in biomass (3%) since 2009, without further electricity market reforms, it will be difficult for Poland to further reduce GHG emissions (OECD, 2012). Given that the electricity market in Poland has basically remained the same, IEA (2011) argued that the decrease of dependence on coal-fired power plants in recent years in Poland could be attributed to the positive impact of the EU-ETS and EU's renewable directives and targets.

6.2. Poland's Reactions and Actions toward Climate Change

6.2.1. The paradoxical priority in the transition: economic growth, energy security and climate change

Before further investigating the influence of climate governance from the EU, (especially the EU-ETS) on Poland, the concept of the transition that Poland has undergone should be analysed first, as this may help to explain how Poland sees its own position, how it prioritises and formulates its preferences, and how it constructs the policies that are related to climate change, in which high levels of cooperation and integration are needed. Havrylyshyn (2011) believes that the transition is a multifaceted process, which contains political, economic, and institutional changes. SOFRACI (2011) suggested that the dichotomy of principles guiding the transition process would be either capitalism or socialism. But neither of these two can take each transition state's initial conditions into consideration. The only difference between these two roads is the speed of realising liberalisation, privatisation and stabilisation.

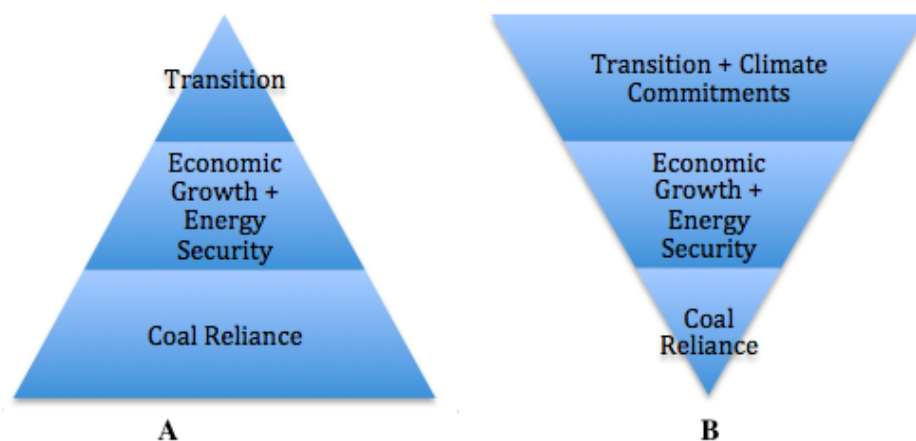
During the privatisation process, around the mid-1990s, greater awareness of environmental concerns began in Poland; however, Poland did not take the environmental cost into consideration when pursuing economic recovery. As a country that was changing from a centrally planned economy to a capitalist market one, most of Poland's attention focused on the privatisation of the state's enterprises, stabilisation, and deregulation in order to grow its economy. Put simply, Poland gave economic growth priority over tackling climate change. Thus, both industry and government had the intention to oppose the closure of the old and inefficient power plants in order to decrease the unemployment rate, rather than consider the environmental damage they caused. Even after the PPP was accepted in the 1990s, the practical questions in policy making and implementation were problematic, because this principle still largely depended not only on how much the polluter actually paid but also on whether the payer's environmental impact was substantial (Millard, 1998). In other words, when the payment could not cause any deterrence but merely impose a symbolic penalty on the polluters, both government and industry were reluctant to take action to reduce pollution, and the PPP then might not work as effectively as it worked in other MS. From the government perspective, in order to grow the economy after the series of structural changes, it had to temporally and maybe strategically 'neglect' the environmental impact but concentrate on industrial modernisation and privatisation. This was supported by the energy sector, which further strengthened the relationship

between the government and the energy sector in Poland. The latter not only has an influence during the energy policy-making process but also plays a fundamental role in economic growth in Poland. This highlights that the economic issue is still placed ahead of other issues, and pursuing economic growth remains the major target in Poland's transition.

Another crucial reason that the Polish government used to justify its coal reliance in transition is the guarantee of national energy security, which involves two factors. The first is the dominance of coal in electricity generation in Poland. According to the IEA (2011) country profile, coal accounts for over half of the primary energy supply in Poland's energy mix, and 90% of electricity is generated by coal. Secondly, as mentioned before, coal resources in Poland are extensive. According to the Polish Geological Institute's calculation in 2012, Poland's hard coal reserves were 19.1 billion tonnes, mainly located in the Upper Silesian Basin (GZW), the Lublin Basin (LZW), and the Lower Silesian Basin (DZW). Total hard coal resources were 48.2 billion tons. In the same year, reserves of lignite were 1.5 billion tonnes, and the resources were 22.6 billion tonnes in Poland. This is why Poland has become the biggest hard coal producer in Europe and was once one of the world's leading suppliers (Gurgul and Lach, 2011). The decades of exploitation of coal in Poland dwarfed the development of other energies e.g. conventional oil, gas, and renewable energy (IEA, 2011; Budzianowski, 2012).

Yet another factor that affected Poland's transition is its move to join the EU, which not only provided economic support in transition but also brought mandatory regulations, especially under climate and energy governance. In order to meet commitments under the EU's legislation, including implementing a range of sectoral and cross-sectoral policies, Poland also has to decrease GHG emissions from its energy sector. In the EU, the power sector is expected to make a major contribution to GHG reduction because, compared to other sectors, the power sector is not exposed to international competition, and its reduction cost is much lower than that of the other sectors (Buchner and Elleman, 2007; Berghmans and Alberola, 2013). So, countries with high GHG-intensive power sectors (such as Poland) might need to change their energy mix in both structural and technological aspects (Budzianowski, 2012). This brought about a gradual change and pressure in the original pyramid of transition in Poland (Graph 36 A->B). In order to meet climate commitments in the EU, several options for inter-fuel substitution gradually emerged, e.g. biofuel and CCS

(Budzianowski, 2012), nuclear power, bioenergy (Nilsson et al., 2006), hydroelectric energy and solar power (Stygar and Brylewski, 2013). However, most of these options are limited by the accessibility of fiscal and technical investment or the low willingness of industries because of higher energy prices.



Graph 36. Pyramid of transition in Poland after entering the EU (A -> B).

However, as shown in Graph 33 on page 208, since 2008, Poland has already become a net importer of coal (ibid; Greenpeace, 2012&2013). Based on Greenpeace's (2013) estimation, the annual cost of coal imports reached €1.5 billion (in 2008). The even worse and more serious fact is that in 2009 about 70% of Poland's coal imports were from Russia (IEA, 2011). All these figures tell the conflicting story that coal reliance can no longer guarantee Poland's energy independence and security. In the end, the pyramid of transition in Poland has evolved into the inverted pyramid shown in Graph 36-B, which may not be able to help Poland to secure what it set out to achieve (economic growth, energy security) let alone to help Poland fulfil its climate commitment under the EU.

Due to the misleading connection between coal reliance and energy security, the process of transition in Poland, both in economy and industry, was slowed down and distorted. The industry transformation did not trigger fuel-mix adjustment, nor did energy efficiency improve. This misleading connection may also partly explain why the EU-ETS in Poland was considered unfit and less efficient than expected. Eventually, a conflict between the coal reliance and the climate commitments in the EU will inevitably happen. It is only a matter of time. Therefore, in order to stimulate energy efficiency improvement in Poland's economy, according to the Energy Efficiency Act adopted in 2011, the Polish government built up a white certificates scheme. The white

certificates scheme was designed for three categories of regulated actors to: (i) save the energy used by end-users, (ii) save the energy used by energy producers from their devices used for production needs, (iii) reducing the electricity, heat or natural gas loss in transmission or distribution. However, according to the Polish government's projection, the application of the white certificates scheme will result in increasing energy prices by between 1.5% and 2% (2015). Apart from this, how the price of white certificates will affect the EUAs price under the EU-ETS remains unknown and needs to be further investigated.

6.2.2. EU-ETS implementation in the Europeanisation stage (2000-2007)

With the principle of *Community acquis*, Poland has to accept and adopt the ET Directive, EU-ETS, which had been negotiated and almost completed by the EU-15 and the Commission before Poland entered the EU. This means that Poland (and the rest of the accession countries) could not bargain and negotiate to protect their concerns or interests but had to accept the whole policy framework package. Even though the Commission did hold an Interim Committee for these new accession countries in 2004, the design of the EU-ETS did not change (Skjærseth, 2010). Thus, it is apparent that at this stage, the new accession countries, including Poland, played the role of 'policy-taker' within the EU. Moreover, according to several previous assessments of EU-ETS implementation, the ETS design did not take account of the transition conditions of new accession countries (Jankowski, 2008; Skjærseth, 2010; Jankowska, 2012). Jankowski (2008) further argued that this was also the main difficulty for Poland in preparing its National Allocation Plan (NAP) and implementing the EU-ETS.

As a country that had no difficulty in meeting the reduction target under the KP and was anxious to recover from the economic recession, Poland's attitude to the EU-ETS remained questioning and skeptical. For Poland, implementing the EU-ETS increased the costs to enterprises but provided neither immediate nor cost-effective benefit to the economy (Jankowski, 2008). Jankowski (2008) identified four conditions for the effectiveness of an emissions trading system, which are: (1) a long run emissions target; (2) clear and stable rules; (3) the implementation of rules with efficiency; (4) the availability of reduction technologies. However, from Poland's perspective, none of the four factors is provided by the EU-ETS. Last but not least, there has been a positive correlation between CO₂ emissions and GDP in Poland since 2005. Combining all the causes listed above, it is quite safe to conclude that Poland's major concern and its core expectation is the economic benefits of emissions trading, rather than the environmental

effectiveness in reducing GHG emissions.

A. Internalising the Europeanised EU-ETS into Poland's legal system

According to the Commission's design, the EU-ETS exists to help MS to meet their GHG reduction commitments under the KP. Following the ET Directive, the EU-ETS operated its 1st phase from 2005 to 2007, which was defined as the 'learning-by-doing' phase. Then the 2nd phase covered the Kyoto commitment period, i.e. 2008-2012. By adding a payment for GHG emissions emitted during production, this economic-based mechanism can either provide economic incentives to develop low-carbon technologies or make the polluters pay for the 'externalities' arising from production and manufacturing processes.⁵⁰

After the Emissions Trading Act (ETA) and the Emissions Management Act (EMA) were adopted in 2004, the EU-ETS was successfully internalised into Poland's domestic legal system. The former Act set out the general framework and essential procedures to help the enforcement of EU-ETS in Poland; the latter is constituted by two systems, community ETS system and national ETS system (Stoczkiewicz, 2011). And the Act on emissions management contained the Linking Directive (2004/101/EC), which included the rules for disposing of emission units.⁵¹ The ETA separated the scope of targeted gases into two parts. The community emissions trading system covers GHGs that came under Annex II of the ET Directive (Article 3(5) in the ETA), while the national emission trading system covers the emissions of 'other substances' (Article 3(14) in ETA), which are SO₂, NO_x and dusts). According to articles 33-36 in the ETA, which are transposed from article 4-6 under the ET Directive, the operators of installations under the EU-ETS need to obtain an 'emissions permit' before they can receive the EUAs. Possessing the emissions permit can be comprehended as the right to emit the GHG. Each emissions permit is valid for 10 years. The crucial authority that has competence to draft Polish National Allocation Plans and allocate EUAs is National Administrator of the Emissions Trading System (KASHUE).⁵² The administration of the system belongs to the National Administrator of the Emissions Trading System

50 The 'externalities': according to the definitions made by Connelly and Smith (1999: 162), it is the 'external consequences of the activities of producers and consumers who do not have to pay for them or take them into account'.

51 The Act also contained Directive 2008/50/EC and Decision 2006/780/EC.

52 Article 14(4) in ETA.

(NAETS), which took charge of hosting the emissions trading registry until it was replaced in 2009.⁵³

The rules governing the transfer and trading of EUAs are set out in Article 26(1) of the ETA. According to Articles 18(1) and 18(2), after the draft NAPs have been submitted to the EU, the Commission has the power to examine them and accept them or request amendments be made by MS. Then the Government can either adopt the NAPs or make the amendments that the Commission has requested. It is also MS' responsibility to monitor and report the implementation.

As one of the accession countries whose total GHG emission amount is far lower than their Kyoto commitments, and with the different economic situation in transition, Poland's emphasis in implementing the EU-ETS would rationally be on the economic incentives and the technology investment it can get to spur its economic growth. The following statement was written in *Poland's Climate Policy: the strategies for greenhouse gas emission reductions in Poland until 2020* (2003:13):

'[...] the success of climate policy will be primarily determined by such measures as will create mechanisms encouraging investors to make long-term capital investment. An opportunity for this is the creation of the emissions trading system, which is one of the short-term priorities of Poland's climate policy.'

The Polish government's attitude to emissions trading can be found clearly in these words. Firstly, it sees the emissions trading system as a short-term tool; secondly, only when the policy instrument can *encourage investors to make long-term capital investment* will it be granted higher priority in the climate governance in Poland. In this situation, it is clear that Poland's EU-ETS implementation is built on the expectation of the economic incentives and technical investment that the EU-ETS might bring. In other words, Poland sees EU-ETS as a 'supplementary economic policy' from the EU with environmental concerns, rather than a climate policy. This can also partly explain why the 1st phase of EU-ETS implementation in Poland largely reflected conflicts on the total amount of free-allocation allowances (cap-setting) and how to define installations that should be included in its NAP, because these two were directly connected to the potential profit that Poland could get from trading free-allocation

53 Article 9(2)(1) in ETA

allowances in the EU-ETS.

B. Drafting the National Allocation Plan (NAP): the emerging conflict between Poland and the EU

Starting from drafting the first NAP, according to Jankowski (2008:333), ‘Preparing the NAP proposal in Poland could be compared to wearing an ill-fitting suit’. The transition process of building up the institutional framework and restructuring industry made it even more difficult for the Polish government to interpret and adapt the European Commission’s rules to Poland’s economy and industry. Thus, with limited access to domestic historical emissions data and the trend of ‘racing to the bottom’ among MS in the EU, Poland did not submit its NAP proposal to the Commission until September 2004. In this version of its NAP, Poland projected its allowances at 286.2 Mt per year for the 1st phase. The Commission did not approve and decided it would assign the allocation at an average level of 239 Mt per year, which is about 16.5% lower than Poland’s projection (Jankowski, 2008; Mizerny et al., 2009).

There are at least two reasons why Poland accepted the adjustments from the Commission and gave up its appeal to the ECJ. Firstly, at that stage, Poland faced an election for a new government, in which gaining support, both financial and political, from the EU might be crucial. It was not a rational option to go against the EU and create more difficulties during the campaign. Secondly, the uncertainty of the appeal process in the ECJ would not bring any advantage to domestic economic recovery and would add more uncertainty from the investment point of view. Given these considerations, the EU-ETS started to be implemented in Poland after the Ministry of Environment adjusted the NAP according to the allowances limit set by the Commission. So, eventually, the total allowances for Poland in Phase I was 717.3 MtCO_{2e}, the NER was set at 2.5 MtCO_{2e}. All the allowances were allocated free of charge (PointCarbon, 2007; Mizerny et al., 2009).

C. The Approach of EUA allocation and scope of sectors in the 1st NAP

According to the final NAP I, the amount of emissions from all ETS-sectors accounted for about 68% of Poland’s total emissions in 2001 (Jankowski, 2008:310). The methodology used to distribute the EUAs mainly relied on grandfathering, i.e. *in which allowances are provided to the installation on the basis of either historical or expected future requirement for such allowances by the installation* (PointCarbon, 2008:6). For the major emissions ‘contributors’ in the power sector, the allocation

amount of EUAs was based on their power capacity and maximum output capacity from 1999 to 2003. But in some sectors (like cement and sugar) the benchmark method was applied, i.e. allowances were provided to installations on the basis of a specific benchmark (ibid). And for coke ovens, the allocation of allowances relied on forecasts and production needs (Mizerny et al., 2009). Some sectors relied on ‘taking early reduction action in previous years’ to receive surplus EUAs. In total, complying with Annex 1 of the ET Directive, the NAP for Phase I in Poland included 14 sectors, which contained 945 installations (Mizerny et al., 2009).

D. GHG emissions from the ETS-sectors in the first phase of EU-ETS

The Polish Government followed the Regulation of the Minister of the Environment of 12 September 2008 *on the manner of monitoring the emission levels of substances covered by the Community emissions allowance trading scheme*⁵⁴ in calculating the CO₂ emission levels covered by the EU-ETS. After third party ratification of these data, they were put into the 6th National Communication and the first biennial Report to the UNFCCC (Warsaw, 2013:123). Among all ETS sectors, the combustion installations ‘contributed’ the biggest share of CO₂ emissions, starting at 163.7 MtCO_{2e} in 2005 and increasing to 165.2 MtCO_{2e} in 2007.⁵⁵ In other key sectors like iron and steel plants and cement, the CO₂ emissions level also retained an upward trend in the 1st phase. The former sector increased from around 7.5 MtCO_{2e} in 2005 to 9.2 MtCO_{2e}, whilst the latter sector recorded an increase from about 8.1 MtCO_{2e} to 9.0 MtCO_{2e}.

Moreover, according to the same national communication report (ibid: 124), the Polish Government clearly acknowledged and noted the direct influence of EU-ETS implementation on itself. Firstly, there was growing use of biomass and co-generation. The former gradually changed the Polish fuel mix, and the latter spurred the energy efficiency of using fossil fuels. Secondly, the awareness of climate change had been growing among both the ETS-sectors and the public. Thirdly, environmental data on fuel consumption and emissions were more comprehensively collected and recorded, which is of benefit to modelling and assessment of the environmental impact.

54 Official Journal of the Laws No. 183, Item 1142

55 The combustion installations contain: main activity power plants; main activity heat and power plants; main activity heating plants and auto-producer heat and power plants.

E. Others issues resulting from implementing the first phase of the EU-ETS

■ The disadvantage from entering the EUA market late

After all the hesitation, the lack of in-depth analysis of its misfit to the EU-ETS, the time pressure, the insufficient historical data and the dispute with the Commission, the beginning of implementing the 1st phase of the EU-ETS in Poland was delayed till the end of June 2006. Karaczun (2011:63) implied that this brought Polish ETS sectors into the disadvantaged situation of entering the EUAs market when the price started dropping. Since the EUAs obtained in the 1st phase were not bankable to apply in the 2nd phase, and there was a large excess of EUAs from the over-allocation and the over-generous 1st NAP, like most of the MS, Poland also suffered from the sharply dropping EUAs price.

■ Windfall profits and the concerns of rising electricity price resulting from the carbon price

This issue of windfall profits has been widely discussed and has caused concerns since the implementation of EU-ETS (but even more intensely after the CDP negotiation). The reason why the so-called ‘windfall’ issue is connected to increasing electricity prices is that end-users have been charged higher electricity prices resulting from adding the opportunity costs of free EUAs to power prices. But the reason why there was relatively little concern about increasing electricity prices resulting from the carbon price in the 1st phase of the EU-ETS may be mainly the fact that power prices in Poland were heavily regulated up to mid-2007 (WWF, 2008). Therefore, there was limited room for electricity sectors in Poland to strategically pass on the opportunity cost of free EUAs to the end-users (Sijm et al., 2008: 16). But with the trend to unbind and further open the electricity market and the start of diversifying its electricity generation sources by increasing gas and renewable energy in Poland, the carbon price has become more and more important.

However, the OECD (2012) argued that the Polish government had exaggerated the impact of carbon price on its electricity price; IEA (2011) also suggested that the electricity market and system of Poland suffered more from inherent difficulties and inefficiency than from the directives and targets from the EU. Nilsson et al. (2006) suggested that the lack of coherent policies in Poland might also slow its bio-energy development, which might affect the speed with which Poland could decrease its dependence on coal. Also, the electricity market in Poland was not competitive and not

open enough either because of vertical integration, where operators in the distribution system preferred to buy electricity from their own generation units. Apart from having an impact on the electricity price in Poland, this may also partly explain the persistent lack of incentives to stimulate energy efficiency in the electricity market in Poland. In other words, the inherent structural problems in Poland's electricity industry might have had a greater negative effect on its electricity prices than the EUAs price does. Moreover, a coordination problem emerged in different energy efficiency criteria; domestic measures like certificate price may have brought different levels of distortion to the electricity price. Skjærseth (2014:38) argued that what made electricity in Poland look more expensive than in other MS in the EU was that its GDP per capita was lower than the EU average. Otherwise, electricity prices in Poland are nominally lower than the EU average.

6.3. The Centralisation Stage (2008-2012): the Implementation of Revised EU-ETS in Poland

6.3.1. Getting ready for the centralised EU-ETS in Poland?

When the 'learning-by-doing' of the first Phase was almost at an end, several issues highlighted that the EU-ETS policy design needed to be revised and re-considered in the light of MS' practices. These issues included: over-allocation, windfall, the allocation methodology and the lack of coherence to the closure (of decommissioned installations) or new entrants' reserves (NERs) regulation. As a market-based policy instrument, the emissions trading could theoretically reduce GHG emissions in a cost effective way. So one of the most obvious obstacles that the EU-ETS had was the dramatically decreasing EUAs price. This suggested the two crucial parts of CAT system (i.e. cap-setting and allowances trading) did not work and the policy design was not comprehensive enough. All these resulted in the almost collapsed EUAs market. Therefore, before the 2nd phase started, it was important for the Commission and the MS both to make sure the formulation of 2nd NAP was on the right track and to attend to the upcoming revision of EU-ETS (later in 2008).

A. Another conflictual negotiation: the NAP II

From the national-level perspective, Poland only needed to meet its own commitment under the KP. According to IEA (2011), like many other transition countries, Polish total GHG emissions (excluding the LULUCF) were well below their 1988 level in 2007. This meant a surplus of EUAs and credits: the CERs, the ERUs and

the Assigned Amount Units (AAUs), became assets to be traded. This is the reason why Poland has actively opposed stricter limitations on using the credits being set by the EU, so it can use these 'assets' to meet the climate targets (Morris, 2014). Particularly when the international credits can be used and exchanged for EUAs under the Linking Directive since 2008, the less regulation set by the EU for limiting their use, the more beneficial the situation is to Poland. As these assets can cost-effectively help Poland to meet its climate targets in the long term. Morris (2014:7) estimated that 1029 million from a total of 2648 million AAUs were converted into EUAs and allocated to Poland's power sectors in the second phase.

From the Commission's point of view, the lesson it learned from the 1st phase was the need to avoid letting over-allocation, windfall and price collapse happen again in the second phase. Stringent cutting of the cap was the first step, but setting the total limit for credits converted into the EUAs market was also essential. Therefore, the Commission set a total limit of 10% for Poland to use credits from the CDM/JI in the second phase (Mizerny, 2009:14). To set a more stringent cap, the Commission applied the 2005 verified emissions data, economic growth and carbon intensity trends as its criteria to examine MS' NAPs II. Poland, which, after intervention by the Commission, had had to decrease its cap for 1st NAP, faced another intervention from the Commission when drafting its NAP II for the second phase. The Commission, in 2007, thought that Polish NAPs for Phase II did not follow the criteria and cut its total annual EUAs by 26.7%. The Commission argued that reducing the high number of allowances for Poland could also encourage ecological investment in the medium and long term in Poland (Jankowska, 2012). So Poland started a legal dispute with the Commission (Case T-183/07).

In 2009, according to the judgements released by the Commission Legal Service, after examining the case, the Court of First Instance maintains that, the Commission exceeded its powers by rejecting the national plans. After referring to the verified data updated for 2008 and taking the Court's judgement into account, the Commissions decided that the cap for Polish ETS sectors in the second phase should be 208 MtCO_{2e}. Poland did follow the Commission's request to reduce its national cap by about 76 million EUAs even though it won the case. So Poland's NAP II became the largest cut by the Commission among all 27 MS (Schleich et al., 2009:41).

Skjærseth (2014) argued that this was because Poland did not want to take the risk of missing the EUAs market trading by delaying the second phase implementation

while the financial crisis was breaking. Poland's keenness to avoid delay also reflects the experience that the Polish government had from the first phase of 'learning by doing'. Regardless of how the carbon price fluctuated and how resistant Poland was to the EU-ETS, any negative influence of the carbon market on its economy was still what it was most concerned to avoid.

Therefore, Poland is actually 'learning' how to address the 'misfit' and trying to take part in 'reshaping' the rules of the game by carrying on implementing the EU-ETS. But if the attempt to re-shape the EU-ETS goes against its main priority (economic growth), Poland may still have to 'absorb' the misfit. But Poland not only 'failed' to internalise the 2008 Directive 2008/101/EC to opt in aviation by 2010 but also 'failed' to transplant the revised EU-ETS (2009/29/EC) for the third compliance phase into its legal system by the end of 2012 (Skjærseth, 2014). Though eventually Poland has to transpose both of these Directives into Polish legal system because of *Community acquis*, these 'failures' confirm the impression that the Polish government continues its opposition and tries to water down the EU-ETS revisions.

B. A Turning point in Polish climate policy negotiation: the EU's Climate and Energy Package (CEP) in 2008

A turning point for Poland's significant active participation in EU-ETS would be the CEP negotiation in 2008, by which not only the government but also the non-governmental actors started stepping forward at both state and EU level. Therefore, a more in-depth analysis of the approach taken by Poland throughout the negotiation of CEP is given here.

During the negotiation of CEP in 2008, the Polish government started taking an active role in negotiating and protecting its own position, particularly in revising the EU-ETS design. As reaching unanimous decisions is required in the European Council for setting up long-term climate and energy policy goals, this gave Poland an ideal opportunity to argue for its preferences by threatening to use the veto to block the CEP (Polish Market 2008:28) to push for its preferences as follows:

- Several years' derogation from entering the auctioning system for countries in which more than 50% of electrical and thermal energy is produced from coal;
- Treating the energy industry on a par with other industries by granting it free emissions rights in 2013, amounting to 80% of real emissions, followed by gradual reduction of that amount to 0% in 2020.

Considering that Poland had threatened to block the CEP, the EU had to compromise as follows (EU, 2009: 87):

- Power plants in Poland and other new Member States would receive up to 70% of free allowances in 2013. This applied to those power plants that had been operating in 2008.⁵⁶
- The amount of free allowances would decline gradually in Phase III.
- Those countries, such as Poland, which had reduced their GHG emissions by over 20% would receive 2% of the whole amount of allowances as rewards, of which Poland would get 27% of these allowances.

According to the examination done by Morris (2014), to what degree Poland could benefit from these concessions still depended on the EUAs price starting from 2013. But Poland would remain the biggest beneficiary from these concessions that the EU institutions provided in the CEP.

C. The influence of CEP on Poland's preferences and position in the EU

The overall CEP negotiation proved a crucial turning point for both the EU and Poland. First of all, it became clear that the EU's energy policy was being gradually integrated into the climate issue and GHG reduction. This pushed the MS in transition that were struggling to balance economic growth, energy security and GHG emissions reduction to participate in negotiations at the EU-level more actively and collectively than before. This provided an opportunity for Poland to strengthen its role within the CEECs. By initiating an interest coalition and using the veto power, Poland secured the interests of the CEECs and, more importantly, uploaded its national preferences into the reshaping of EU-ETS. Since then, Poland has frequently used (or showed the intention to use) the veto power in the EU's climate negotiations and EU-ETS revision. For instance, Poland was the only veto player in the negotiation between 2011 and 2012 of the Commission's energy roadmap and the EU's low-carbon roadmap towards a decarbonised Europe by 2050. Skjærseth (2014) focused on this significant trend and how Poland became a 'governmental veto player', to which he applied Tsebelis' (2002) definition: 'a set of specific individuals or collective actors whose agreement is necessary to change the status quo.' It is quite evident that Poland has shown a clear tendency to influence what changes are made (to both of the EU's climate targets and

⁵⁶ Article 10a (1)-(5) in Directive 2009/29/EC

the EU-ETS design) by means of being a ‘governmental veto player’ in EU’s co-decision processes.

Secondly, the overall idea of centralising the EU-ETS reinforced the important role of the ‘trialogue’ of EU institutions, i.e the Parliament, the Commission and the Council. To an extent, it also symbolised another step forward in the process of European integration. For Poland, especially after forming an interest coalition with and taking the lead among the Visegrad and Baltic countries⁵⁷ to apply pressure on the Council, it became easier to upload its national interests to the EU. Therefore, especially in the EU’s climate negotiations, Poland has become an essential yet informal leader of the CEECs (ibid). Furthermore, when it comes to EU-ETS revision, the CEECs, which had missed the chance to initiate and participate in the EU-ETS formulation in 2003, would undoubtedly try to get further involved and to ‘upload’ their preferences to the EU level this time. Thus, later, while Poland held the presidency of the Visegrad Group from 2008 to 2009, it took the lead and the Visegrad Group signed a joint statement agreeing on the need to adopt a new global climate change agreement at the Copenhagen climate conference in 2009. This action showed that Poland continued to strengthen its leadership among the transition countries in dealing with the climate issue (Jankowska, 2012), while it also intended to show informal leadership in the global climate regime. More simply, by being a ‘strategic veto player’ and an unofficial leader of the MS in transition, Poland clearly pointed out that an ‘East-West split’ had emerged in the EU’s climate negotiations. Chris Huhne, the UK Energy and Climate Change Secretary, considered Poland to be the main obstacle in the EU’s path to becoming a low carbon economy (BBCnews, 2011).

However, from the resulting CEP and the on-going climate commitment negotiations, whether Poland is becoming an influential ‘policy-maker’ has not been confirmed yet. Receiving the 60% free allowances of temporary derogation in 2013 did not cease Poland’s concerns about rising electricity prices resulting from the EUAs price (once the free EUAs decrease). Neither can it solve the conflict between its coal

⁵⁷ The Visegrad Group is also called the ‘Visegrad Four’, or ‘V4’. It is an alliance of four Central European states with the purposes of furthering their interests during the European integration, advancing military, economic and energy cooperation with one another. So initially, it contained Hungary, Slovakia, Czech Republic and Poland. In the recent years, the Baltic countries, Lithuania, Latvia and Estonia are also included in the V4.

reliance and any climate commitment for Poland in the long run. When Poland's Prime Minister Ewa Kopacz showed determination to oppose a tougher climate commitment at the EU Summit in October, it became obvious that Poland had chosen the route of 'watering down' the EU's ambitious target-setting in order to secure its economic growth on the basis of coal-reliance. In Poland, there is a near consensus among the political elites, industry and public that more stringent environmental targets and measures will impede the economy (Braun, 2014). Since 2009, Poland has been acting more firmly and taken a tougher stance to oppose and consciously block climate protection activities and negotiations (Karaczun, 2011).

6.3.2. EU-ETS implementation in the Centralisation stage in Poland

According to the revised 2nd NAP, Poland distributed 208.5 Mt EUAs per year, which makes the overall cap of 2nd phase 1029 MtCO_{2e} (Warsar, 2013). The total number of installations is on average 820 (from 2008 to 2011). This variation is due to the inclusion of new entrants or the exclusion of installations whose production capacity fell below the thresholds set by the EU-ETS (Warsar, 2013). Also, after applying much clearer definitions of combustion installations, the number of installations was different from the 1st NAP (Mizerny et al., 2008). The EUAs allocation was based on historic emissions, production data and benchmarking, and projected emissions (ibid). From the administration system point of view, following the *Act of 17 July 2009 on the Management of Emission of Greenhouse Gases and Other Substances* (MEG Act), the National Centre for Emissions Management in Poland (KOBiZE) was placed under the Ministry of the Environment. Since then, KOBiZE has taken over KASHUE and become the major administration agency that takes responsibility for auctions, EU registry, reporting, monitoring and verification, and NAPs/National Implementation Measures (NIMs)⁵⁸ (Skjaereth, 2014). KOBiZE also takes charge of submitting reports to the UNFCCC and of the supervision of the CDM/JI registry. More broadly, referring to article 4 of the MEG Act, KOBiZE has been the major institute for environmental protection in Warsaw since 2009 (Jaś, 2012).

Table 22 on the next page lists the brief results of 2nd phase EU-ETS

⁵⁸ Since the EU-ETS was revised in the CEP in 2008, the National Implementation Measures (2013-2020) is set and designed in the revised EU ETS Directive (Article 10a) with the purpose of improving the transitional community-wide and fully-harmonised measures in EU-ETS implementation in those MS who are applied to the derogation rule (Article 10c).

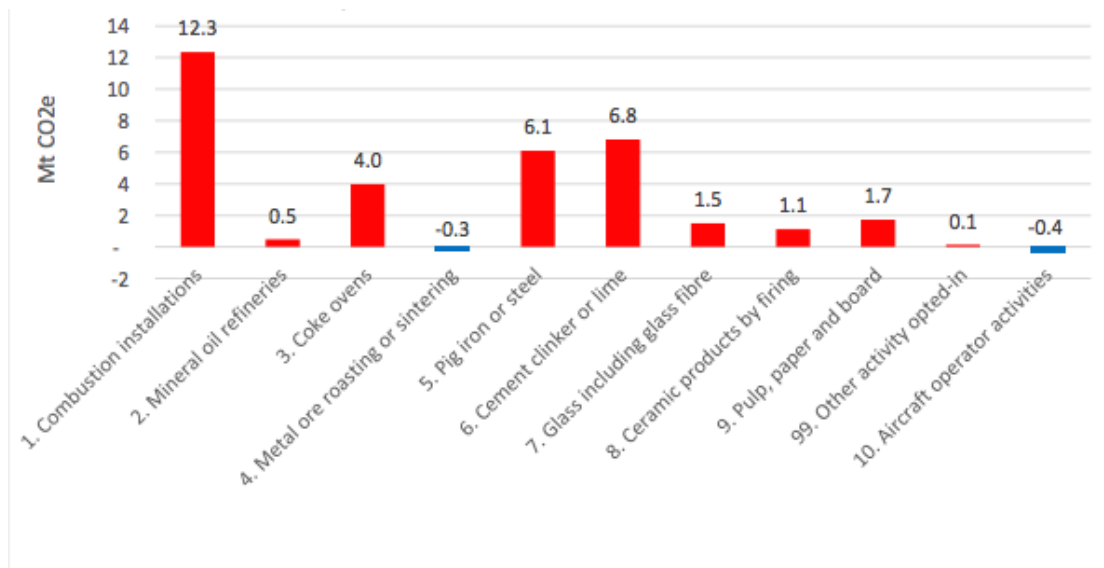
implementation in Poland, which can provide a basic understanding and a starting point for further examining Poland's actions and reactions under the EU-ETS. First of all, unsurprisingly, following Poland's base year set under the KP, none of any year's total GHG emissions between 2008 and 2012 exceeded the emissions level in 1988 (564 MtCO_{2e}). Secondly, total emissions suddenly declined from 400.2 MtCO_{2e} in 2008 to 380.6 MtCO_{2e} in 2009, which was due to the financial crisis. This makes the increasing emissions after the economic recovery in 2010 more understandable. Thirdly, verified emissions accounted for about 50% of total GHG emissions in Poland.

Table 22. Brief results of 2nd phase EU-ETS implementation (Unit: MtCO_{2e}).

Year	2008	2009	2010	2011	2012
Total GHG emissions	400.2	380.6	401.7	399.4	377.1
Verified emission	204.1	191.2	199.7	203.0	196.6
Issued EUAs *	201.0	202.0	205.6	207.2	213

* The unit here is: Million EUAs. Source: EEA Report (2013).

Based on the Sandbag calculation (Morris, 2014), the total amount of verified emissions in the 2nd period in Poland was 995.3 MtCO_{2e}, of which combustion installations shared 87% (865 MtCO_{2e}). Referring to the European Environment Agency's report (EEA, 2013), the major reason is the dominant role of coal combustion in Poland's power generation. Comparing these results with the 1st phase of EU-ETS implementation, it is no wonder the EEA (2013:36) indicated that the Polish energy generation mix did not change substantially between 2005 and 2012, consumption levels stayed constant, and emissions had not deviated significantly from 2005 levels. Another point that emerges from these verified figures is that the surplus of EUAs reached roughly 33.9 million in total. Breaking this down to sectoral level, as displayed in Graph 37 (next page), a large share of the spare EUAs is from the combustion installations (12.3 MtCO_{2e}), while the spare EUAs from cement clinker or lime sector comes second (6.8 MtCO_{2e}). Then comes the iron and steel sector at 6.1 MtCO_{2e}.



Graph 37. Spare EUAs by ETS sectors in Poland in 2nd phase. Source: Morris (2014: 9). Data: EEA ETS Fata Viewer.

When the overall EUAs in 2nd phase were again over-supplied, the eligibility to use international credits to offset GHG emissions made this difficult situation even worse. According to data released by the EEA (2013), although there was a 10% limit set for Poland, a total of 96 million credits (including the CERs and the ERUs) were used to offset emissions in 2nd phase. While the average rate of using credits was 76% in the EU, the credits that Poland used reached around 93% of the limit. Two reasons can explain this phenomenon of high credits use (Morris, 2014): (i) Given that the EUAs allocation approach would change to auction in 2013 and the free allocation would start decreasing, the desire to save the bankable EUAs issued and allocated from the 2nd phase for later was reasonable and predictable. ii) When the cost of purchasing credits is lower than the EUAs price, the firms (which are short of EUAs) will of course be more willing to use credits.

6.4. The Reconciliation and Integration Stage (2013 to present): A ‘veto player’ with ‘Polonisation’?

6.4.1. Reconsider and relocate the role of EU-ETS in Poland’s energy policy and climate policy

The two phases of EU-ETS implementation and the adoption of the CEP highlighted that the crucial block in Poland’s path to meeting EU’s climate commitments was its energy sector. Also, McKinsey & Company (2010) assessed that over 50% of the total GHG reduction potential in Poland is in its energy supply sectors, e.g. electricity, petroleum, and gas. Therefore, despite its ‘efforts’ to strategically negotiate the new climate commitments at the EU level by being a veto player, Poland did acknowledge the need to re-adjust its energy policy mix after the CEP was adopted. Compared with strengthening its national climate policy, the Polish government put more focus on securing its inherent energy-mix and policy, both of which it considered as the crucial foundation to sustain its economic growth. This explains why the *Energy Policy of Poland until 2030* (EPP2030) was quickly drafted and then adopted in 2009. Therefore, the absence and the continuing lack of a national climate policy can also be interpreted as an attempt to be a ‘strategic laggard’ to minimise the negative effects from implementing the EU’s climate policies in its domestic economy. Also, by looking into the EPP 2030, several attitudes that Polish government held in relation to EU climate policy can be found.

The EPP2030 contained the objectives, targets, and major measures for reforming the energy sector in order to meet the 20-20-20 commitments. The overall objectives can be summarised as follows (IEA, 2011; Gurgul and Lach, 2011; OECD, 2012; Sadowski et al., 2013):

- Enhance national energy security
- Assure the growth of competitiveness
- Improve the energy efficiency of the national economy
- Limit the environmental impact of the energy sector

In spite of being aware of the misfit between climate and energy targets and the national energy mix and policy, as Dreblow et al. (2012) comment, the EPP2030 did not change Poland’s energy policy very much. It maintained its emphasis on a secure, affordable, and diversified energy supply. Also, the leading role of coal, which Poland used to maintain energy independence from Russia’s oil and gas, was sustained and confirmed

again by the EPP2030.

However, as can be seen in the main objectives listed above, setting up a climate-friendly goal for its energy sector, i.e. limiting the environmental impact of the energy sector, is the only thing that Poland confirmed. Besides, to pursue a climate-friendly energy sector, Poland strengthened its focus on improving its energy efficiency (McKinsey&Company, 2010; IEA, 2011; Sadowski et al., 2013) because this would not only reduce GHG emissions in production but also trigger the sector's transformation and technical modernisation, which would benefit both economic and industrial development in the long run. McKinsey & Company (2011) also predicted that with the EPP2030's improvements for energy efficiency, Poland could eliminate a further 97 MtCO_{2e} of GHG emissions.

As for GHG emissions reduction and the EU-ETS, only limited and vague measures are listed in the EPP2030 as follows:

- Devising a plan for CO₂ reduction for installations given free allowances in the period of 2014–2019
- Developing an investment plan for reducing CO₂ emissions from the power sector
- Using income from auctions of emission allowances to support GHG reduction activities

These show that the Polish government's attitude to and acknowledgement of the EU-ETS is limited to its direct profit from free allowances and allowances auctioning, especially since Poland secured the concessions through 'community solidarity' and 'early effort' from the Commission in the CEP in 2009. According to an ESMAP report (2011), EUAs auctioning in the third phase is estimated to bring significant revenue, approximately 1% of GDP, to Poland. According to Morris's estimation (2014:5), because of the special provisions and treatment from the 'solidarity', Poland will receive 37 per cent (369 million) free EUAs in total in the third phase. But, apart from this statement, no climate policy was adopted to explain how and by what measures the Polish government would use the revenues from the EU-ETS to contribute to more GHG reduction. It was not until 2011 that the Polish government finally constructed the *Centre for Climate Policy Analysis* with the help of international organisations (which will be discussed later). Other than this, domestic actions taken were few and limited.

Besides the vague measures listed above, there is little evidence of what measures Poland will take to realise its climate-friendly goal. It seems that the Polish government has been stalled by the conflict between the EU's climate commitments and its domestic fuel-mix need. So far, climate policies in Poland have been seriously inadequate, which makes it more difficult for Poland to improve the coordination between energy policy and climate governance in the long run, especially after the CEP was adopted in 2008. So far, apart from *Poland's Climate Policy: The Strategies for Greenhouse Gas Emission Reductions in Poland until 2020*, which was adopted in 2003, there are no more explicit long-term policies or measures that have been updated in Poland (Dreblow et al., 2012). Within Poland's Climate Policy 2020, the emissions trading approach was merely defined as the optimal short-term instrument to create long-term capital investment in Poland (Ministry of the Environment, 2003). And this incumbent climate policy contained a timetable of only from 2003 to 2012. This highlights that Poland should begin constructing its long-term climate policy, which should take not only the EPP2030 but also the new climate commitments into consideration.

6.4.2. Pursuing the 'Polonisation' or reconciling with EU integration?

It seems clear that being actively involved in and implementing the EU-ETS may benefit Poland, as it can provide an opportunity for Poland not only to resolve its misguided block in transition, i.e. coal-reliance, but also to fulfil its climate commitments under the EU. However, if Poland wants to further influence the climate targets negotiation and the EU-ETS design revision at EU level, it will need to reposition the role of EU-ETS in its overall transition strategy first.

After the CEP was adopted in 2008, it was predicted that implementing the CEP and meeting the 20-20-20 goals would lower Polish GDP by an average of 1% (the World Bank, 2011; Bawol et al., 2012; Jorgensen and Kasek, 2011; Bohringer and Rutherford, 2013). If Poland could successfully affect the climate commitment negotiations at the EU summit, it might slightly decrease the pressure on its GHG emissions reduction in the short term. Especially after gaining the experience of implementing the EU-ETS in Phase I and Phase II, both the political elites and the regulated actors in Poland showed a stronger negative attitude toward climate policy from the EU. From when the CEP started being negotiated in 2007 in the European Council to its coming in to force in 2009, Poland gradually came to perceive the CEP as a threat to its economic competitiveness and a block to its social development (Karaczun, 2011). In other words, from Poland's perspective, revising the EU-ETS has

become not merely an environmental issue but a matter of securing economic development.

Therefore, domestically, the CEP strengthened Poland's resistance to the EU's climate governance and, ironically, improved inter-ministerial cooperation, especially between the Ministry of Economy and the Ministry of Environment. Besides, not only the governmental actors but also the industries and the public formed a consensus of stronger resistance to the EU's more ambitious climate policies and more stringent EU-ETS. Within the EU, Poland has started playing a pro-active role in negotiating the EU-ETS revision and opposing or watering down the EU policies and climate targets, which scholars have called 'Polonisation' (Skjærseth, 2014), with the concept of Poland being a 'governmental veto-player'. After refusing to sign the EU low carbon roadmap 2050 in 2011 and watering down the negotiation until 2012, the next major disagreement was in 2013 when Poland took the Commission to the ECJ and claimed that the gas-based benchmark used in the EU-ETS went against equal treatment. The court rebuffed the case (Peter, 2013).⁵⁹

Starting in 2011, the Ministry of Environment, the Ministry of Economy and the Ministry of Finance jointly constructed *the Centre for Climate Policy Analysis* with help from the World Bank for the purpose of examining the implications of climate and energy policies from the EU. In 2014, the Ministries established a climate-modelling unit with technical assistance from the World Bank (World Bank, 2014). More recently, they also proposed an impact assessment of implementing the 2030 Framework (Boratynski, 2014; Skjærseth, 2014).

In 2014, while the amount of auctioned EUAs was reduced by 400 million under 'Backloading', the Commission proposed a revised framework of climate and energy policy for 2030 with the new binding target of reducing GHG emissions by 40% from 1990 levels, plus an EU-wide renewable energy target (27%) (Commission, 2014). In order to reach the total GHG reduction target of 40% by 2030, the annual EU-ETS cap was increased from 1.74% to 2.2% after 2020. Apart from the cap setting, the MSR was introduced for the purpose of resolving the existing and accumulating surplus EUAs in

⁵⁹ Poland has the most carbon intensive energy mix in the EU, the gas-based benchmark with the decreasing free allocation rule in the revised EU-ETS meant that Poland would need to pay more for getting EUAs. According to Egert (2012:14) report, the electricity price would rise by 10% to 25% for coal-fired plants.

the EU carbon market.

The Polish government and its EU-ETS stakeholders remained strongly opposed to these ‘manual’ or ‘institutional intervention’ attempts to control the EUAs price, as these might lead to a decrease of predictability and transparency in the market-based mechanism (PKEE, 2012; Fujiwara et al., 2015). And according to the EurActiv (2012) analysis, Poland might lose over a billion euros and 16% of its allowance revenues under the proposed ‘Backloading’. This can partly explain why the Polish government showed clear and strong resistance to ‘Backloading’.

While many MS, led by the UK and Germany, jointly support the idea that the MSR should start operating in Phase III instead of waiting until 2021, Poland remains strongly opposed to it. Besides, following the European Parliament’s Briefing of the EU Legislation in Progress in 2016, the Polish government filed a complaint against the MSR in the ECJ and argued that it would distort the market in the current trading period.

Apart from the MSR, as it actively participated in the CEP negotiation in 2008, Poland still played the game of being a veto player, coordinating the opposition with other CEECs in the Council of Ministers and the Council when negotiating the 2030 Framework. Poland also continued to take the lead in the Visegrad Group and teamed up with Romania and Bulgaria to indicate their common position on the 2030 Framework.⁶⁰ This major East-West split was reflected in the different concerns expressed in the joint statements from both groups. The CEECs (led by Poland) emphasised: i) retaining sovereignty over the energy mix; ii) a heavier reduction burden to be carried by the ‘rich’ MS and iii) more EU subsidies for modernisation and economic growth. The other group (led by the UK and Germany) preferred: i) more ambitious targets; and ii) a stronger MSR to start in 2017 to stimulate low carbon investment through a stronger carbon price signal.

Looking into the outcome of the climate and energy framework 2030, as commented by Skjærseth (2014), when it comes to the setting of climate targets, Poland and its climate and energy governance have to accept and be ‘Europeanised’ by the EU. Nevertheless, as in the 2020 climate and energy package (i.e. the CEP), Poland and the

⁶⁰ The Visegrad Group Countries, Romania and Bulgaria Joint Paper on the EU climate and energy framework 2020-2030.

other CEECs put more focus on keeping the Modernisation Fund, and the continuation of Article 10c derogation of the EU ETS Directive would remain in the 2030 climate and energy framework (Skjærseth, 2014; Energy&Climate, 2014; Sandbag, 2016). Since the CEP came into force in 2009, those MS with GDP per capita below 60% of the EU average (such as Poland) have received enormous year-on-year financial support via the auction revenue under EU-ETS for modernising the energy sector (Energy&Climate, 2014; Aleksandra, 2015). Besides, with Article 10c derogation rules, the countries in transition (like Poland), which rely on a single fuel in their energy mix, are eligible to allocate the EUAs to their power sectors for free. According to Energy & Climate's (2014) projection, of the total €12 billion potential revenue until 2019, Poland will receive more than half (€7.4 billion), while a further €9 billion worth of EUAs is going to be redistributed through the 'solidarity mechanism',⁶¹ by which Poland has already intended to use all its share (€3 billion) to reduce its deficit on the government budget.

As the biggest beneficiary among the CEECs, considering the financial benefit it can gain from the EU-ETS, it seems that completely opting out from the EU climate package would be against Polish national interests. According to the Sandbag calculation (2016), with every €1 per tonne increase in the carbon price, the funds for these CEECs will also increase by about €1 billion, while it also increases the income from auctioning EUAs by €1.7 billion. Therefore, the higher the carbon price that is triggered by the more ambitious cap at the EU level, the higher the revenue to these CEECs, as long as they can keep the free-allocation rules under Article 10c, and the revenue they can share under the Modernisation Fund while negotiating with the richer MS. In these circumstances, given the contextual factors that have formed Polish national interests under EU-ETS implementation, it is understandable that Poland would accept the EU's ambitious climate targets in exchange for further leverage and negotiation on securing the funds (i.e. financial support) and revenue it can receive under the EU-ETS. Skjærseth (2014) considered Poland's acceptance of the EU climate targets as a sign that the Europeanisation effect on Polish national climate and energy policy has been stronger than the 'Polonisation' effect that Poland intended to exert on

⁶¹ Poland and other CEECs successfully included various concessions in the 2030 framework. And one of which is to make sure that they can continue to get 2% and 10% of solidarity funds to modernizing their energy system.

the EU. But according to what has been observed and examined in this chapter, it may be more likely that after implementing the EU-ETS, a trend of reconciliation among actors from different levels has emerged. Also, in the Reconciliation and integration stage, the actors' networking and agenda-setting capabilities have shown that the seed of MLG has started to grow in Poland because of EU-ETS implementation. Even though what the transition countries (like Poland) want from the EU and its climate governance might not be identical to what the western (or so-called 'richer') MS want, EU-ETS implementation and revision indeed provide a stimulus for the reconciliation trend to adjust the governance structure.

Conclusion

To sum up, the key concepts for explaining what Poland wanted to achieve in transition, and how, are its economic growth, coal reliance, and energy security. For Poland, the major target is to pursue economic growth until its economy can compare to those of the western countries, regardless of its transition status. And the crucial factor in speeding up its economic development is the satisfaction of the economy's energy demand. However, since it became a net energy importer in 1991, Poland's economic growth has been directly connected to coal reliance. Considering the domestic energy production and reserves, Poland's transition is therefore unavoidably built on coal.

Since joining the EU, Poland has had to fulfil climate commitments regulated by the EU, which has been seen as a major obstacle in Poland's path to pursue economic growth, especially after the CEP was adopted in 2008. However, since the adoption of the CEP, meeting climate and energy commitments set by the EU has also become part of Poland's duties in its national climate and energy governance. Meanwhile, after years of largely relying on coal, Poland has become a net coal importer. In other words, adherence to coal use can no longer guarantee the energy security that is defined by the Polish government as a priority. Not to mention that relying heavily on coal in its ageing energy system will neither help Poland to meet its climate commitments under EU's long term climate governance nor stimulate its economic growth.

Due to the misleading connections between economic growth, coal reliance and energy security, the process of transition in Poland, both in economy and industry, has become slower and more distorted. And the conflict between coal reliance and climate commitments will have a detrimental effect on the economy in Poland if it continues to

rely on coal. The worst thing is that coal reliance may further increase Poland's dependence on fossil fuels imported from Russia, which would exacerbate Poland's energy security concerns and run counter to its core national preference. So, aside from improving its energy efficiency by implementing the EPP2030, Poland also has to expand its primary energy generation sources by further developing renewable energy and drawing up appropriate regulations. And without funding from the EU, whether from the Modernisation Fund or from the revenues gained by the derogation under Article 10c of the EU-ETS Directive, it will be more difficult for Poland to achieve these goals.

Therefore, continuing to implement the EU-ETS and being actively involved in the revision and negotiation at EU level may be the best way for Poland to resolve its conflict and difficulties. As mentioned in sub-section 6.4.2, the benefits gained from the revised EU-ETS can encourage cooperation among actors from different levels, and this may help to gradually remove the obstacles in Poland's transition. Continuing to negotiate actively on targets, directives and regulations at EU level may be necessary for Poland, an argument which recent developments at the EU Summit strongly support. Domestically, the inconsistency and the lack of policy support is another issue in Poland's EU-ETS implementation. In order to fully implement the 2030 framework, there is a need for inter-ministerial authorities between the energy and environment domains, especially when constructing long-term climate policy and coordinating national renewable energy policy.

The limited accessibility of technical investment is another issue that Poland needs to overcome, from both government and industry aspects. This indicates a greater need for Poland to be reconciled with the EU. From the industry point of view, an open, stable and highly transparent investment environment needs to be built up with comprehensive and consistent government policy. For Poland, especially its electricity market, it is not carbon price that limits its technology investment but insufficient market liberalisation and the lack of proper policies to support and encourage investment. For a transition country like Poland, standing at a crossroads after two decades of transition with unfit strategies, to comply with the 2020 Package and the 2030 Framework will come at a much higher economic cost than for the average EU member state because of the coal dominance in both the energy sector and the electricity sector (ESMP, 2011; Jorgensen and Kasek, 2011). So, it is time for Poland to reassess its priorities and key components for its transition and upload them to shape the EU's

framework (i.e. the measure of ‘Polonisation’). In other words, as a transition country in the EU, Poland may try both changing the “rules of the game”, i.e. being actively involved in the EU-ETS design and climate negotiations, and making the best use of these rules, i.e. improving its policy system and sectoral transformation by implementing the EU-ETS under the trend of reconciliation.

Chapter 7 Conclusion

Introduction

Since the EU-ETS started operating in 2005, apart from some loopholes in its policy design, it has led to several multi-dimensional conflicts as well as cross-level problems, in both the trial phase (2005-2007) and the second phase (2008-2012). However, before the findings from each case study are further examined, it is necessary to conclude the macro-level analysis, by which this study can identify the general trends of each stage and their influences on the targeted countries.

In the Europeanisation stage (2000-2007), as supported by the literature addressed in this thesis, MS were able to exert considerable influence on the EU-ETS when the Commission needed their support (apart from the Poland case). The EU secured their approval to apply the EU-ETS (top-down) by leaving the allocation and cap-setting to the MS (bottom-up). During the first phase of EU-ETS implementation (2005-2007), as expected, the ‘learning-by-doing’ was not limited to the trial nature of the EU-ETS design application but also included the learning process for both MS and all regulated sectors to accumulate experience and decide what they wanted from the EU-ETS. With the MS’ inherent contextual factors, different positions and attitudes to the emissions trading approach, the EU-ETS implementation in the learning process led all three targeted MS to focus on different needs from the EU-ETS revision.

After the first phase of the EU-ETS, calls for revision and greater harmonisation of the EU-ETS emerged, which led MS and the Commission to reach a consensus to amend the EU-ETS design by using a more centralised approach. According to Article 249 of the EU treaty, the common goals are set centrally by EU Directives while MS have the competence to choose their own measures. However, the unique structure of ‘principal-and-agent’ has gradually increased the complexity because of the development of the EU-ETS. During the Centralisation stage (2008-2012), the interaction (either synergies or conflicts) between the EU and its MS showed that merely harmonising the EU-ETS design by a centralised approach was not enough. A more vital part of EU-ETS implementation that may help to achieve the long-term goal of a low-carbon economy in the EU is that the MS’ national measures (especially the energy policies) need a greater degree of harmonisation at the EU level. More precisely, from the Europeanisation stage to the Centralisation stage, the remaining difficulties in EU-ETS implementation show two things: i) as proposed in Chapter 3, the interaction

between EU institutions and MS has been in both directions. ii) The centralising EU-ETS revision in the Centralisation stage reinforced the need for integration in both top-down and bottom-up directions.

In the Centralisation stage, while fixing the EU-ETS in order to facilitate the transformation to a low-carbon economy, the EU institutions highlighted the synergies between climate and energy by stating ‘an ambitious climate policy would contribute to the achievement of energy goals, and vice versa (Commission, 2007a; 2007b)’. To encourage the political negotiation among the MS to reach unanimity in the Council and get the co-decision from the Parliament (Article 251), the package approach has been frequently applied since the CEP in 2008. Since then, even if the MS have their own competences to choose the measures, the more harmonisation (synergies) there is between the EU-ETS design and national energy policies in the EU’s climate governance, the more beneficial it will be, and the better it will fit the MS’ preferences. In this situation, those MS which can process the synergies (or conflicts) between their national preferences and the EU-ETS design and upload them into the negotiation at the EU level more efficiently might derive more benefit for themselves from the EU in the long term.

Since the EU-ETS entered into the Reconciliation and integration stage in 2013, the trend of ‘reconciliation’ has been emerging in both revisions proposed by the Commission and the reactions of the MS, in which the reconciliation between the states’ and the EU’s climate and energy governance seems to have become the more practical way to revise the EU-ETS in the context of the EU’s 2030 framework. From the micro-level, we found that although under different contextual factors, all three case studies (the United Kingdom, Germany and Poland) showed similar features: (i) All three MS’ positions or their reactions to the EU-ETS have changed during EU-ETS implementation. ii) At the sectoral level, the ETS-sectors from the three targeted countries have all become more pro-active since the ‘learning-by-doing’ process and learned to increase their influence on revising EU-ETS at both national level and EU level, which plays a part in bringing the EU-ETS revisions more in line with the concepts of MLG.

Apart from the similarities among the three case studies noted above, several factors have been found that merit further explanation to address the interaction of these three countries with EU-ETS implementation and revision. These contextual factors are crucial for this thesis to answer the first two research questions of this study, which are:

- i. What composes the national preferences, and how are they prioritised when member states implement both the national climate policies and the EU-ETS?
- ii. Does MS' prioritisation of these contextual factors lead to synergies or conflicts between their own policies and EU-ETS implementation?

In order to systemically illustrate and interpret these factors and their connection with the EU-ETS, the time-frame in this chapter follows the macro-level analytical framework set out in Chapter 3 while MLG is adopted as a supplementary tool to understand how EU-ETS implementation has gradually expanded the range of actors involved, and to understand their actions and reactions, in which features of 'reconciliation and integration' are shown and a clear trend in this direction has emerged. Afterwards, based on the outcome summarised from the three case studies, the third research question will be answered in the penultimate part of this chapter, which is: 'Is it possible for the EU to resolve these conflicts or strengthen these synergies within the EU's climate governance structure by revising the EU-ETS, which, in turn, may contribute to a more efficient and integrated EU climate governance?' Last but not least, the contribution, the limitations of this research and the need for further research will be addressed.

7.1. Unpacking the National Preferences of Member States in the Europeanisation (2000-2007) Stage of the EU-ETS

There is a well-known 'top-down' obligation the EU places on its MS, which falls under the principle of *community acquis*, but this research intended to identify what national preferences are and how they are re-formed during EU-ETS implementation in Phase 1 (learning-by-doing) and how they continue to affect EU-ETS revisions later (bottom-up). Following the three case studies investigated, some similarities and differences in the contextual factors are worth further comment here because they are the core components of formulating the states' preferences when implementing the EU-ETS, helping to show their position later when negotiating EU-ETS revision. To make the analysis clearer and more systematic, the contextual factors are listed in Table 23 (next page).

Table 23. Targeted MS' inherent contextual factors and positions on the EU-ETS.

Member state	United Kingdom	Germany	Poland
Structural change	'Dash for gas' in 1990s	'Wall-fall benefit' in 1990	Transition since 1989
Continuity in national climate policy options	Prefers MBMs; Consultation-based, voluntary cooperation and compromises with industry.	Emphasises domestic measures (renewable energy).	Transition status Economic growth Opposed to climate policy
Energy-mix/ energy-economic structure	Large share of fossil fuels but much smaller share of renewable energy. Emissions fell while carbon content remained high.	High carbon intensity in energy sector. Renewable energy grew from 3.6% to 25.8% (1990 - 2014). GHG emissions still increasing.	Coal reliance in electricity sectors (90% - 95%). Restricted and non-competitive electricity market until 2007.
Initial attitude to EU-ETS	A Pioneer/ an advocator	A laggard	An Opponent
Attempts to shape EU-ETS	The definition of 'combustion sector' adopted in the Commission Guidance before the end of 2005 and applied in phase II.	The Case T-374/04 in the ECJ on the legality of <i>ex-post</i> adjustment provision in NAP (2007)	The conflicts over the NAP I (& II) drafts between Poland and the Commission.

First, all three targeted countries had experienced structural changes that later led to GHG reduction as a by-product. At that point, none of the targeted countries were aiming to reduce GHG emissions. In the first case, the UK, the major target set in the ‘dash for gas’ in the 1990s was to privatise electricity generation and encourage the use of natural gas, which fortunately helped the UK reduce roughly 70 MtCO_{2e} between 1991 and 2005. In Germany, the ‘wall-fall benefit’ brought about by German reunification helped Germany’s GHG emissions drop by 18.3% between 1990 and 2001; while in Poland, the country’s overall GHG emissions dropped by 19% before 1991. Though all three structural changes did not directly involve policies for reducing GHG emissions, they were beneficial for the targeted countries when negotiating their GHG emissions reduction targets later (whether under global treaties or in the BSA) and even in the trial phase of EU-ETS implementation.

Second, the national climate policy options that have long been affected by traditional political philosophy or political systems are another factor that directly affects MS’ actions and reactions toward the EU-ETS. In the UK, because of the political philosophy of consultation-based cooperation in policy-making circles, the awareness of climate change and GHG emission reduction is clearly shown in the country’s national climate policy options. Based on numerous, broad-ranging consultations, the technical limitations and practical concerns about policy implementation can be effectively integrated into the policy-making circle, which not only increases the willingness of regulated sectors to cooperate, but also increases the effectiveness of the policy. Put briefly, the national climate policy options in the UK are, and have long been, largely based on consultation, voluntary cooperation and compromise with the industry in question, as with the CCA and the UK-ETS. This plays a crucial role in forming expectations for the later stage of internalising the EU-ETS because the regulated sectors have already experienced and been prepared for the MBMs.

In Germany, the federal system set environment and sustainable development into its constitution with three basic principles. Thus, Germany broadly relies on an ‘inter-institutional cooperation’ mechanism to implement the objectives set by its central government. Added to this, Germany’s electoral system easily creates coalition governments, making the policy-making highly reliant on obtaining a consensus. This is reflected in Germany’s climate policy options, which have a high level of stability and continuity across the country’s different governments. These are command-and-

control and voluntary instruments with certain financial support for developing renewable energy. This continuity affected the German government's position when negotiating its community-wide eco-tax and created its hesitant attitude toward emissions trading later. It also explains why Germany was lagging with the EU-ETS.

But when it comes to Poland, there is a very different scenario: continual opposition to ambitious climate target setting. This trend in policy-making has generally remained even when the structure of Polish governments changed after the election of different political parties. From Poland's perspective, since the Soviet bloc collapsed, the emphasis has been on the economy; achieving recovery and then sustaining growth in the transition phase have been prioritised. Although, upon joining the EU, Poland had to internalise the *community acquis*, the lack of a national climate policy gives an indication of where Poland's priorities lay. There has only been one national climate policy, which was adopted in 2003; it remains little more than a symbolic gesture. Thus, in the Europeanisation stage, the major motivation for Poland to adopt climate policies and targets, either from the EU or from the global bodies, was most likely to gain the financial and technological support needed to keep the economy growing by being politically acknowledged and accepted. This can explain why Poland's initial position on the EU-ETS showed passiveness, forming Poland's awareness of the EU-ETS as an economic tool that might benefit its economy and industry (with economic support from the EU). Thus, from observing the three case studies above, the continuity in national climate policy options seems to have played a crucial role, affecting not only these MS' awareness of the EU-ETS but also the speed with which they internalised it.

The third crucial contextual factor that affected the targeted countries' attitudes toward the EU-ETS is each country's energy mix, which is directly related to the state's energy-economic structure. Again, the three targeted countries were chosen for this study because they accounted for the lion's share of total GHG emissions in the EU. Although in all three countries the major emitters were the energy sectors, especially the electricity generation sector with high carbon intensity, these three countries have had different reactions to and preferences for the EU-ETS.

In the UK, starting from the Europeanisation stage, a large share of fossil fuels and a relatively small share of renewable energy are the two major energy sources in the British energy mix. The 'dash for gas' in the 1990s not only helped reduce GHG emissions, but also reformed the British energy mix. However, after the UK

implemented the EU-ETS, which uses a gas-based benchmark for allocation, a strategic fuel switching between coal and gas can be observed in the first (and the second) compliance period. Because of this strategic fuel switching between coal and gas in the Europeanisation stage, it is unsurprising that carbon intensity remained high and GHG emissions in the UK continued to increase in the first phase of the EU-ETS. When the carbon price was low, there was no sufficient economic incentive for the operators in electricity sector to invest in switching between fossil fuels and renewable energy, so they simply carried on using gas. Eventually, fuel switching did not help the overall GHG emissions reduction in the UK in the long term. Adding to its inherent preference for ‘technology-neutral’ policy from the EU, it is not surprising that the UK started ‘fixing’ the overly low carbon price in the domestic market (i.e., CPF) while it showed full support for the EU’s instruments for fixing the carbon price under the EU-ETS (i.e., the Backloading and the MSR); however, the UK remained opposed to the EU setting binding national targets in renewable energy development.

In Germany, the lion’s share of GHG emissions is from its electricity and heat production, which is because over 60% of its electricity is generated by fossil fuels. Carbon intensity remains high in the German electricity sector because 45% of total electricity is generated by hard coal and lignite. Therefore, ironically, Germany's GHG emissions have continued to rise, even though its renewable energy has been growing significantly, increasing by more than 20% between 1990 and 2014. This feature of the German energy mix can be explained by the continuity in Germany's climate policy, in which the country has long preferred domestic measures for stimulating and developing renewable energy in its climate and energy governance. In other words, although the necessity of implementing the EU-ETS was fully recognised by the German government and the policy was well internalised into Germany’s national climate governance, the country continued to lag in accepting the EU-ETS while actively emphasising renewable energy development. Thus, the impact of the first phase of the EU-ETS on Germany was limited. Apart from reducing the investment in coal-fired power stations in 2005 (Auer, 2014), the EU-ETS neither triggered changes in technology nor stimulated other developments in German power generation (Hoffman, 2007). At the same time, compared to the decision of simply removing the ex-post clause from the NAP II after Case T-374/04 in the ECJ, Germany actively promoted the role of renewable energy in the EU’s climate governance and advocated for setting binding renewable energy targets for MS.

Besides, the case of Germany contrasts with the UK case. For the UK, with its preference for MBMs and technology-neutral policies, reducing GHG emissions seemed unlikely to directly link to its renewable energy development. In Germany, the domestic measures to advance renewable energy development are broadly acknowledged to benefit GHG reduction. Therefore, comparing the importance of energy policies (both for energy efficiency and renewable energy) in the EU's climate governance, Germany's attempt to shape the EU-ETS design remained lower than the UK case, at least at this stage.

In Poland, the reaction to its carbon-intensive energy mix was the country's continued insistence on coal reliance. Because of the transition, Poland reduced GHG emissions by 30% without applying any other climate policies; however, its energy mix, and especially power generation, is still highly reliant on coal. In addition, given that the Polish electricity market was not completely open until 2007 and showed clear opposition to climate policy, it is not surprising that the EU-ETS internalisation and implementation remained symbolic in Poland at this stage. As a market-based instrument designed to reduce GHG emissions, the EU-ETS would neither provide the expected economic incentives nor trigger further green technology investment if the electricity market and the electricity price setting were still under the protection of state aid and coal subsidies. On the one hand, it shows that the influence of EU-ETS's implementation on Poland remained low. On the other hand, for a country that has no urgency in reducing GHG emissions and focuses on continuing economic growth, how to maximise the economic gains from the EU-ETS is more important than lowering GHG emissions. Therefore, compared with the previous two case studies, Poland positions itself at the other end of spectrum, where it values the economic, more than environmental, effectiveness of the EU-ETS.

Another essential feature of Poland related to its energy-economic structure is the misguided belief in the importance of coal for its energy security and economic growth. With this misguided belief, Poland showed stronger opposition to the EU-ETS and has lagged in negotiations and its implementation. This further endangered the EU-ETS carbon market's stability because Poland continued to be a beneficiary of EU-ETS. After the revisions, when a more stringent cap becomes certain, a higher EUA price is likely to be stimulated, and the higher the EUA price is, the greater the revenue and benefits Poland will receive under the EU-ETS. In other words, after experiencing 'learning-by-doing' in the Europeanisation stage, although having a passive attitude to

the EU-ETS, Poland has gradually figured out clearer preferences from the misfit between its inherent contextual factors and EU-ETS implementation, that is, reinforcing its special transition status to maximise the benefits but minimise the level of stringency from the EU-ETS.

As listed in Table 23 (page 246), the MS's attitudes toward the EU-ETS and their national preferences regarding formulation are not simply decided by one factor or a single direction. On the contrary, MS' attitudes and their preferences are firstly formed by (i) the domestic structural change; (ii) the continuity in national climate policy options; and (iii) the energy-economic structure. The EU-ETS's implementation has triggered numerous complex interactions between the economy and politics and between energy and climate governance, which challenged MS' competence in sensitive issues such as energy. Therefore, in accordance with the definition of Europeanisation given in Chapter 3, the EU-ETS's implementation in the Europeanisation stage is more likely to be a 'two-way interaction between states and the EU'. After the contextual factors of each case study in the Europeanisation stage have been identified, the states' initial attitudes toward EU-ETS can be better understood.

However, during the Europeanisation stage, the attempt to 'upload' MS' preferences was still largely dependent on how fast the national energy-economic situation could react to the EU-ETS revisions and reflect the 'misfits' between the EU-ETS's design and national needs. In the UK's case, thanks to its consultation-based cooperation in policy-making circles and the continuity of preferring MBMs, it quickly realised that its 'misfit' was how to define the combustion sector and successfully exert influence by providing a definition of the 'combustion sector', which later became the basis of the combustion installation definition in the Commission Guidance, which was applied in phase II. Poland, slowed by the misguided domestic priorities of economic growth, coal reliance and energy security, was relatively weak in uploading its national preferences and 'shaping' the EU-ETS during this stage.

7.2. Different Effects of EU-ETS Implementation on the Member States in the Centralisation Sage (2008-2012)

In the second phase of the EU-ETS, the policy design was substantially revised and centralised by the CEP in 2008. Although most of the revisions made in the CEP would not be applied until the third phase in 2013, it still clearly signaled to MS that climate policy would be more centralised and integrated with energy policy. Therefore, the influence of this series of centralisation moves and adjustments on states' preferences and priorities can be seen in this stage.

It is not difficult to understand why the Commission adopted the package approach for many revisions and negotiations. Theoretically, through issue-linkage, the issues that are valued differently by MS can be put on the negotiating table to find mutually beneficial and acceptable concessions. In other words, the difficulty of political negotiation among the MS can be overcome by adding issues as a 'side-payment' in exchange for agreement from those MS that are resistant to negotiation (e.g. Poland). On the one hand, from the Commission's point of view, strengthening the synergies between its climate and energy in the EU's climate governance can hopefully improve the effectiveness and efficiency of the EU-ETS and directly help the EU secure good leadership in global climate policy and negotiation. Also, by emphasising the synergies between climate and energy, the CEP not only distributed the burden of climate change mitigation among MS, but also placed part of the long-term reduction burden on MS' energy governance. By strengthening policies and targets on renewables, energy efficiency and technological innovation in energy policy, the Commission expects to put the concept of tackling climate change at the centre of the energy policy-making process.

However, it seems that the package approach that accompanied the integration of climate and energy policy did not help with implementation of the EU-ETS or promote long-term decarbonisation. Skjaerseth (2014:45) considered that the reason could be '*the asymmetrical interests and values attached to energy security and climate change*'. Apart from this reason and following the three case studies, it seems that the CEP also neglected the different approaches and values that each MS applied based on their own inherent contextual factors, which led to the asymmetrical interests in relation to the EU-ETS. After climate and energy were integrated into one package, these asymmetrical interests and different values that MS had in the first phase of EU-ETS implementation then experienced another re-formulation.

In the UK, the national climate policy mix experienced another integration because several opt-out sectors participated and joined the ETS-sectors at the beginning of 2008. Regionally, the increasing number of sectors and the expanding scale of the EU-ETS regulated by the Commission led to an increase of 9MtCO_{2e} in the UK. Apart from the expanding scale of the EU-ETS, along with the UK becoming a net buyer in the EUA market in the first phase, the UK's interest in and urgent need for an effective carbon market under the harmonised EU-ETS design was then strengthened. At the same time, the UK reinforced its preference for 'technology-neutral' rules when negotiating long-term, community-wide climate change mitigation measures. This reflects its resistant attitude toward the EU's setting of legally binding national targets for renewable energy or energy efficiency. Also, following the experience from the UK-ETS, the UK was in a position to fix the EU-ETS regarding the securing of carbon prices by (i) allocating the allowances by auction and (ii) setting a floor price for EUAs. These clear national preferences were expressed in two actions during the Centralisation stage of EU-ETS implementation. First, the UK started allocating the EUAs by auction to the maximum amount set by the ET Directive (10% in Phase II). Second, the UK strongly supported the Commission's idea of changing the allocation approach to an auction in the third phase of the EU-ETS. It is, therefore, safe to conclude that there is a synergy between the EU-ETS's revision and the UK's preferences regarding the EU-ETS. This is also probably the only symmetrical interest and value that the UK shares with the CEP. The EU eventually placed legally binding targets on MS' renewable energy development, which shows the general asymmetrical interests and values toward the UK's renewable energy policy.

In the German case, with the country's inherent clear preference for developing renewable energy, Germany actively promoted the integrated European climate and energy policy while it held the Presidency of the Council in 2007. And by 2010, Germany also adopted the *Integrated Energy and Climate Programme* domestically in the same year and Energy Concept 2010. These actions can be interpreted as Germany's intention to show its directional leadership within the EU and then increasingly place emphasis on renewable energy at the EU-level by integrating renewables development into the EU's central pillar of climate governance; however, Germany remained skeptical of EU-ETS's implementation. Nevertheless, after the CEP was adopted in 2008, Germany reacted quickly to transpose the revised EU-ETS by adopting the Allocation Ordinance 2020 and Emissions Trading Regulation 2020 in 2011. More

importantly, Germany took the lead in building up the Special Energy and Climate Fund (EKF), which became the first full-budgetary earmarking to manage its revenue from EU-ETS implementation for national and international climate financing. Until the end of the second phase of the EU-ETS, there was a total of €3 billion that Germany gained from auctioning EUAs. Also, after the more stringent cap was set for NAP II, German energy sectors also became net buyers in the carbon market, which reinforced the need for both Germany and its industries to seek a more effective and efficient carbon market under the EU-ETS. In other words, Germany's attitude gradually adjusted, and its preferences were re-formulated to become more active during the Centralisation stage of EU-ETS implementation.

Turning to Poland, this thesis is in agreement with Skjaerseth (2014); although Poland successfully lobbied for concessions under the name of 'community solidarity' and 'early effort', strong asymmetrical interests and different values attached to energy security and climate change remained clear between Poland and the Commission. Even though Poland has been a net importer of coal since 2008, the country still insists that coal reliance could guarantee its energy security, even as its domestic coal mining and production have declined. Following the investigation in Chapter 6, the CEP was a clear turning point where Poland started acting as a 'governmental veto player', showing its strong opposition to the EU's climate and energy policy. Also, by aligning with other CEECs to form interest groups, Poland has become the informal leader of EU transition countries. Both of these two actions constructed a vague image of so-called 'Polonisation'. Therefore, if the CEP is seen as part of a stronger trend of 'Europeanisation', with the main characteristic being centralisation, the Polish case shows that the CEP had very limited success in increasing Poland's acceptance of integrated European climate and energy policy. Instead of stimulating convergence between climate and energy governance, the CEP was acknowledged by Poland and its industries as a threat to its energy security and economic growth, which reaffirmed the divergence between its energy and climate governance. These reactions from Poland show the clear conflicts between the EU's climate and energy policies and Poland's national ones. During the second phase of implementing the EU-ETS, and because of the CEP and the revised EU-ETS rules, there was more visible, widespread, cross-level and joint opposition to the EU-ETS in Poland. More explicitly, from the EU-ETS's point of view, the conflicts between Poland and the EU's climate governance continued, regardless of Poland's beneficiary status in the EU-ETS.

7.3. Synergies or Conflicts Reflected by the Member States' EU-ETS implementation in the Reconciliation and Integration Stage (2013- to present)

Based on the analysis above, it is clear that MS' national preferences and attitudes have been significantly affected by EU-ETS implementation and revision. More precisely, the initial asymmetrical interests and different values that MS held in relation to the EU-ETS were largely determined by the contextual factors: the structural change; the continuity of the national climate policy options; and the energy–economic structure (as mentioned in Section 7.1). But later, the MS were also affected by the ongoing revisions of the EU-ETS and the whole package of the EU's climate and energy policy. Therefore, given the asymmetrical interests and different values that MS held in relation to the EU-ETS, and later for the CEP, it is possible that their actions toward the EU-ETS in the Reconciliation and integration stage may also be inconsistent.

In this section, the analysis and discussion will be focused on summarising how the targeted countries have reacted to EU-ETS implementation in the Reconciliation and integration stage and why they have had these reactions. Also, the assessment will include whether there is a correlation between the targeted countries' reactions to the revised EU-ETS design and their further actions in negotiation at the EU level. After that, the revised attitude of each of the targeted countries shown toward the EU-ETS will be addressed, in which the synergies or conflicts between national preferences and the EU-ETS's evolution will be demonstrated.

As addressed in Table 24 on the next page, following the three case studies, the different approaches each country undertook to fix the 'misfit' between national preferences and the EU's requirements for the EU-ETS can show their core values and what they expect from the EU-ETS and the EU's climate governance in the long term. In the British case, the major tool to fix the misfit between national needs and the EU's requirements is the Carbon-Price Floor (CPF) that started in 2013. At state level, the CPF reflected the UK's reliance on market-based instruments and the increasing demand for a meaningful and incentivised carbon price signal. It represented the joint influence of the continuity of national climate policy options and EU-ETS implementation. At EU level, the UK's attempt to focus on fixing the overly low EUA price was also consistent with its traditional role of being an initiator and advocator of the EU-ETS.

Table 24. Reactions of the targeted MS to the EU-ETS in the Reconciliation and integration stage.

	United Kingdom	Germany	Poland
Initial position to EU-ETS	Pioneer/advocator	Laggard	Laggard / Opponent
Cognition to EU-ETS	Reducing the GHG but gaining Economic incentives	Environmental Instrument for GHG reduction	Economic tool from gaining revenue.
National attempts to fix the misfit between national needs and EU's requirements	Carbon-Price floor (CPF)	Specific Energy and Climate Fund (EKF); CAP2020 and 'climate contribution' (taxation)	Retain benefits from 'community solidarity' and 'early efforts Water down the EU's ambitiousness in climate target-setting
Preferred EU-ETS revision	A stringent cap; Allocation by auctioning; Start the MSR in 2017 Keep climate mitigation measures and mechanism technology-neutral No binding national RE targets.	A stringent cap; Allocation by auctioning; Start the MSR in 2017 Strengthen the role of RE in GHG reduction.	Less ambitious targets The benefit from 'community solidarity' and 'early efforts Opposed to political interference (MSR) in the carbon market Opposed to the high carbon price.
Revised position on the EU-ETS	An advocator of the EU-ETS. A role model for	A role model for fixing overflow EUAs by national	A governmental veto player A 'Strategic

	fixing carbon price by CPF	‘climate contribution’	laggard’ The leader of CEECs
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Compared with the other MS, the UK has remained an influential and active participant in the EU-ETS since the initiation stage, with the clear intention of maximising the synergies between national climate change measures and the EU-ETS’s design. Also, the UK’s emphasis on a meaningful carbon price and its economic incentive gained from the EU-ETS has become much clearer. Although the precise efficiency of the CPF for fixing and ‘topping-up’ the carbon price in the UK remains uncertain in practice, it can be seen as the UK’s attempt to strengthen its influence and leadership, not only in the EU’s climate and energy policy-making (politically), but also in the EU’s carbon market in the long term (economically).

At EU level, from the UK’s point of view, to boost carbon prices and solve the problem of over-supplied EUAs, it is reasonable that the UK would support a more stringent cap in the EU-ETS; more ambitious EU climate targets in the long term; EUA allocation through auctioning; and the early start of MSR. Although, in the short term, it does not seem possible for all MS to agree on setting a price floor for EUAs, if the flow of EUAs is strictly controlled by MSR and a more stringent cap, the EUA price, as a major component of the EU-ETS, can fit the UK’s national preference: meaningful carbon prices from the EU-ETS and MSR but within a technology-neutral EU climate governance.

In the German case, parallel emphases on integrating climate and energy development and fixing the carbon price to benefit from the auction revenue of the EU-ETS have been shown since the Centralisation stage. On the one hand, as demonstrated in Chapter 5, Germany’s green market has been observed to suffer from inconsistent carbon prices since the Centralisation stage, which was from inconsistent implicit carbon price signals, a result of both EU-ETS implementation and Germany’s national climate and energy policy mix. This may not only present a threat to its EGS and ETS-sectors, but could also slow its energy reform. On the other hand, based on the experience of allocating EUAs by auctioning them, the German government is also aware of the potential benefit it can have if the overflow EUAs can be resolved. Therefore, the German government adopted CAP2020 and ‘climate contribution’ in 2014 and 2015, respectively. The former listed Germany’s additional measures to supplement and speed up its GHG emissions reduction under existing energy and

climate policies. The CAP2020 aims to reduce GHG emissions and improve energy efficiency from its major emitter (i.e. the electricity sector) at the same time, whilst it can also reduce the total amount of EUAs in the market by removing the EUAs purchased by the installation operators that exceeded the threshold set by climate contribution.

Therefore, Germany's approach to fixing the misfit between national needs and the EU's requirements also closely reflects its national preferences and core values expected from the EU-ETS. More specifically, since the CEP came into force and the EU-ETS was continually operated on in the Centralisation stage, a synergistic effect has emerged between Germany's national climate and energy governance and the EU's climate governance. Although the country's 'climate contribution' cannot be explicitly assessed before it comes into force in 2017, it still shows Germany's ambitions and position, which were triggered by the synergistic effect, including (i) fixing the over-supply of EUAs in the carbon market, a major problem leading to under-valued EUAs; (ii) reducing GHG emissions from its major emitter under the EU-ETS by improving energy efficiency; and (iii) preventing the carbon leakage issue in other MS. Following this synergistic effect, the continuity and consistency between Germany's preferred version of the revised EU-ETS at EU level and its domestic measures can be observed clearly, reflecting the German government's support for fixing the inefficient carbon market; to set up a more stringent cap; and to start the MSR mechanism earlier than 2020. Additionally, strengthening the legally binding renewable energy and energy efficiency targets for MS is also supported and promoted by Germany, which can be seen as actions taken at EU level in an attempt to enhance its EGS and green technology advantage within the EU in the long run.

Lastly, in Poland, as assessed in Chapter 6, the two phases of EU-ETS implementation and the adoption of the CEP have reinforced Poland's opposition to the EU's climate and energy policy. Poland's major approach to fixing the misfit between its national needs and the EU's requirements under the EU-ETS generally remains the same: (i) emphasising its status of transition and being a 'veto-player' to prolong the concessions under the name of 'community solidarity' and 'early efforts'; (ii) remaining a 'strategic laggard' to minimise the negative effects from implementing the EU's climate policies; and (iii) continuing its informal leadership among the CEECs and watering down the EU's more ambitious climate and energy targets and policies. Based on these preferences and efforts, at the EU level, it is no surprise that Poland retains

strong opposition to political interference in the carbon market (MSR) and any intervention or measures that might lead to a higher carbon price. Even if complying with the 2020 Package and the EU's 2030 Framework would come at a much higher economic cost to Poland than the average EU member state (ESMP, 2011; Jorgensen and Kasek, 2013), considering the increasing benefits Poland stands to gain from the revised EU-ETS, continuing to implement the EU-ETS and being actively involved in its revision and negotiation at the EU level are still essential for Poland. As suggested in Chapter 6's conclusion, it is time to resolve the dilemma between 'Polonising' the EU's climate and energy policy and being 'Europeanised' by the EU's climate and energy policy in the Reconciliation and integration stage of the EU-ETS.

7.4. Multiple Reconciliations: Another Step for European Integration in EU's Climate Governance

As addressed in the last section, the synergies (in the UK and German cases) and the conflict (in the Polish case) triggered by MS' EU-ETS implementation have gradually risen to the EU level, which has made the EU struggle even more to effectively and efficiently keep to its trajectory toward becoming a low-carbon economy. It is very important for the EU to resolve these conflicts and strengthen any synergies when fixing the EU-ETS. But is it possible? After examining the three case studies, it appears that EU-ETS implementation has shown significant influences from both the EU side of expecting more integration and MS' side of re-prioritising preferences. This result followed the belief mentioned in Chapter 3: EU-ETS implementation is a moderator variable. Therefore, when it comes to fixing the EU-ETS, the part that needs to be completed first is identifying the influences triggered by the EU-ETS.

Following the examinations of the three case studies, several signs of calling for more reconciliation regarding fixing the EU-ETS have appeared; they all reflect the problem of governance structure in the existing EU climate regime. First, reconciliation between energy and climate policies is unavoidable, regardless of how much the MS are resistant to it. In the three targeted countries, a connection between the energy mix and EU-ETS implementation has been identified as closely linked to each state's core values. Although the centralised EU-ETS has been part of the EU's energy policy since 2008, the outcome of EU-ETS implementation in the Centralisation stage showed that merely setting top-down targets for both climate and energy governance is not enough. The need to adjust governance structures to reconcile the conflicts between the climate

and energy domains at the EU level is essential. More explicitly, it is not practical to fix the EU-ETS without considering the EU's energy governance (especially the policies for renewable energy and energy efficiency). From the German case we learned that inconsistent carbon prices emerged from national energy policies, which increased Germany's abatement cost on GHG reduction and cost of funded renewables. Another avenue could be the national measures for improving energy efficiency and developing renewable energy; this could either increase the surplus of EUAs or increase carbon leakage within the EU. Thus, though MS such as Poland showed strong resistance and argued the country had the right to make its own energy mix⁶² or, such as with the UK, strengthen the 'technology-neutral' feature that EU policy should remain, more harmonisation among national measures in energy governance is vital for the future of EU-ETS revisions.

Secondly, regardless of showing synergies or conflicts with the EU-ETS, all three case studies showed convincing evidence that increasing the reconciliation between actors can actually decrease the issue of 'asymmetrical energy-economic interests', which is essential before the actors can participate in the EU's climate negotiation. More explicitly, EU-ETS implementation encourages national climate governance structures to fall in line with the concepts of (i) flexible design and (ii) more jurisdictional levels involved in the policy-making of the MLG. Even without changing the jurisdictional levels in the legal system, the EU-ETS's implementation has increased the coordination and cooperation between levels (both vertically and horizontally) or even created the need to construct special (and sometimes cross-level) authorities. To advance or protect a state's interests in EU-ETS implementation and revision, it is crucial for the country to stay flexible in its governance structure so that it can effectively react to the needs of the carbon market.

Apart from improving the reconciliation between governmental actors, EU-ETS implementation also stimulates more active and cross-level involvement from non-governmental actors. The representative examples are Eurelectric (in the German case), the High Level Group (UK case) and the Polish Electricity Association (Polish case). Therefore, reconciliation between all these actors at EU level is needed as well. From the revisions adopted in 2008, the 'trialogue process' increased the reconciliation among EU institutions to the required level; however, governance structures that can

⁶² Article 194(2) in the Lisbon Treaty. Details can be found in chapter 2.

be flexible enough for EU institutions, MS and the stakeholders of the EU-ETS are still lacking.

Third, two (UK and Germany) of three case studies have taken national actions to actively fix carbon prices. However, they both showed that reconciliation and cooperation between different market-based instruments for reducing GHG emissions with a meaningful carbon price have started to be emphasised and tested. For the UK, by ‘topping-up’ the additional taxation (aka CPF) on the EUAs’ price, the British government attempted to incentivise its low-carbon power generation. In Germany, a similar attempt was made using the carbon price (aka Climate Contribution) to incentivise improving energy efficiency without risking carbon leakage somewhere else within the EU. This shows the urgent need to reconcile the different market-based instruments while applying them all at the same time because these national instruments may have a direct influence on the carbon price signals of the EU-ETS. Therefore, without a governance structure to reconcile these national market-based instruments at EU level, it may not be possible to fix the carbon price under the EU-ETS in the long term.

To summarise the above, it may still be possible for the EU to resolve the conflicts or strengthen the synergies resulting from MS when fixing the EU-ETS. But the key will be whether the EU is able to build up or adjust its climate governance structure to adapt to these synergies and conflicts from MS’s implementation. In other words, the EU-ETS has been placed not only as a central pillar of the EU’s climate governance, but also as an essential engine to contribute to a more efficient and integrated EU climate governance. The new concept triggered by the EU-ETS’s implementation is called ‘reconciliation’. From the integration theories, the need for more reconciliation for further revising the EU-ETS shows that the ideal way to make the EU-ETS’s implementation more effective and efficient is for it to be in line with MLG.

Only when the governance structure is more in line with MLG will the EU-ETS bring benefits. Nevertheless, as mentioned in Chapter 3 (research design) and supported by the three case studies, by arguing that the governance structure for the EU’s climate and energy policies needs to be adjusted to be more in line with MLG, we believe that the MS will retain their crucial roles in the EU’s climate governance. By assessing these three case studies, we found that national sovereignty might reduce its descriptive power when the EU-ETS gradually develops to be more in line with MLG. However, on the one hand, EU-ETS implementation remains largely reliant on MS’ ability to

reconcile the conflicts between national and EU climate and energy policies. On the other hand, without MS's willingness to cooperate and participate, even under the *community acquis*, it would remain an even longer, more challenging process for the EU to become a low-carbon economy (e.g., Poland as the veto player).

Apart from the governmental actors, the roles of industrial associations, especially those constructed by ETS-sectors, have emerged and become more important during the negotiation of EU-ETS revision. It is clear that instead of working alone at EU level to lobby and negotiate with EU institutions, these industrial associations have not only shown their influence at national level (e.g., Eurelectric in Germany) by working with the MS, but also increased their lobbying and other activities at EU level (e.g., the High level Group). It seems that because of the market base and the design of the EU-ETS, the descriptive power that the national sovereignty reduce is partially transmitted to these regulated sectors, which increases the levels of jurisdictions involved in the EU-ETS. Before starting to negotiate EU-ETS revisions at EU level, it is essential for the MS and industrial associations to reach an agreement. In other words, the MS's roles will remain crucial, even in the reconciliation and integration stage. But without building a flexible yet transparent governance structure to fit the reconciliation needed, EU-ETS revision will become even more complicated after the wider energy governance is involved and integrated.

7.5. Contributions and Recommendations for Future Research

This study first unpacked the national preferences formed by the MS' inherent contextual factors. Identifying what really matters to the selected MS can help improve the understanding of how to fix the EU-ETS in a more practical, explicit and workable way. By further tracking the targeted MS' actions before and after the EU-ETS's revisions, this study found that the way MS were aware of the EU-ETS also directly affected their positions and preferences when negotiating revisions for the EU-ETS at EU level. Second, to fix the EU-ETS's design and bridge the climate policies and energy policies to fulfil the EU's climate targets, the governance structure at the EU level needs to be more in line with MLG, in which either the synergies or the conflicts from MS's implementations can be fully resolved. Finally, after reinvestigating the EU-ETS development in the climate governance under the concept of EU integration, it is safe to conclude that the role of the EU-ETS has not merely been as a central pillar in the EU's climate governance, but also as a crucial driving force for EU integration. Starting from the 'two-way' Europeanisation stage, the development and the

implementation of EU-ETS has moved the EU forward to the Centralisation stage, which highlights harmonising the EU-ETS with a package approach. Afterwards, the EU-ETS further drove both the EU and its MS, moving to the Reconciliation and integration stage, in which the joint gains needs to be built on and can only be retained in the new governance structure (NGS), and the design needs to remain flexible enough for the cross-level (vertical) actors to upload both climate and energy measures.

To sum up, from what was observed in the three case studies, the effects of EU-ETS implementation on different targets are as follows:

- It draws an increasing number of actors from different jurisdictional levels into the EU-ETS, changing behaviour in the process.
- It leads to institutional changes because the actors' behaviour has been changed with the EU-ETS's revision.
- After changing the actors' behaviour and the institution, EU-ETS implementation inevitably speeds up EU's integration and moves from focusing on the dichotomy (e.g., top-down or bottom-up convergence or divergence) to reconciliation and interactions between levels.

However, according to the latest revision in the 2030 Framework, which was adopted in 2014, much of the existing analysis and government consultations have only focused on the MSR. Even several MS (e.g., Germany) clearly argued their concern that merely operating the MSR may not be sufficient to fix the EU-ETS; the measure and the approach of further revisions for the governance structure remained unclear. Although the new idea of constructing the NGS was addressed in the 2030 Framework, the purpose of constructing this was to help MS meet the climate and energy policy goals while allowing them to choose the best-matched policies for individual national preferences. And unfortunately, only a few principles about constructing NGS were mentioned.⁶³ Therefore, further inter-disciplinary research on the new idea of the NGS is needed. Without clearer and more transparent support from the governance structure, it is very difficult for the EU-ETS's further revisions to work as effectively as the EU expects.

⁶³ For example, the governance system will be built on the existing building blocks and will facilitate the coordination of national energy policies and encourage cooperation among MS (European Commission, 2014).

Another limitation that needs more future research is MS' national preferences and their awareness of the EU-ETS. Although the representativeness and the importance of the case studies are carefully noted in this thesis, given the limited time and energy, this thesis could only provide three MS. To fix the EU-ETS, there needs to be a more comprehensive understanding of every MS under the EU-ETS. As clarified before, the MS' preferences and their awareness of EU-ETS are widely affected by inherent contextual factors from the domestic arena, which directly lead to their positions and preferences toward the EU-ETS's revision. Given that these formulation processes in each MS are carried out on a case-by-case basis, the influences (either synergy or conflict) that are triggered by the EU-ETS's implementation are different. Without further research to fill these gaps, it is not possible to build a flexible and transparent framework for reconciliation purposes, which may further de-stabilise the EU-ETS and EU's climate governance situation.

To sum up the above, the EU-ETS is still under the global carbon market's spotlight, considering its market size and pioneer status. Thus, the 'learning by doing' process will be carried out by not only the EU and its MS, but also all the stakeholders in climate governance. Thus, future research on how to fix the EU-ETS may need to focus on at least three dimensions:

- Further identify how each MS composes its national preferences and how each one is aware of the EU-ETS's revisions and implementation.
- Further clarify the idea and develop the structure of the NGS for the EU's climate and energy governance in practice.
- Further expand the understanding of the EU's integration with the concept of reconciliation.

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Appendix: the Linking Directive 2004/101/CE

A year after the ET Directive was adopted in 2003; the EU institutes adopted the Linking Directive 2004/101/CE, which allowed the member states to cooperate with other countries through Joint Implement (JI) or Clean Development Mechanism (CDM) credits. Excluding the economy concerns stimulating the allowances market through connecting the CDM/JI market, as Ellerman et al. (2010) affirmed, two political concerns could also be related. Firstly, to a certain degree, it could ease the reduction burden of member states, as they can consider using the credits from CDM/JI received from an external market. Then, the willingness to support the EU-ETS from member states could be maintained or even higher. Secondly, with the EU's perspectives, using the Linking Directive could effectively connect the global credit markets, either through CDM or JI, to the EU's emissions trading market. It could not only strengthen the EU's influences on the climate market, both credits and allowances, but also the EU's influences on pursuing leadership in global climate negotiations.

As parts of 'flexible mechanisms' to help the contracted countries to reduce GHG reduction, the CDM allowed for credit-based cooperation between developing countries and JI provided chances to cooperate with economies in transition countries under Kyoto Protocol (Perdan and Azapagic, 2011; Wurzel et al, 2013). In the EU-ETS, the connection to these global credits market is legally bound by the Linking Directive (2004/101/CE) and was adopted by the EU parliament. The received credits from CDM are called 'certified emission reductions' (CERs) and the other ones from JI are called 'emission reduction units' (ERUs). Under the Linking Directive, the exchanging rate is set as $1\ CER = 1\ ERU = 1\ EUA$, which can greatly assist the efficiency of reduction. However, the credits obtained from nuclear facilities, land use change and forestry activities should not be included.

Referring to the 'supplementary principle' regulated by the Article 6(1)d, Article 12(3)(b) and Article 17 under the Kyoto Protocol, setting the limitation for applying these CERs and ERUs for meeting compliance requirements to a percentage of the allocation to each installation for most member states is important. However, the Linking Directive did not clearly list the maximal amount of usage and left this discretion to the member states, which need to be clearly regulated via their NAPs. It also showed the bargaining process between the EU institutions and the member states, meaning that the Linking Directive can be seen as a bargaining tool in order to

weaken the trend of opposition and to increase the support from member states for EU-ETS.

In addition to being seen as an ‘internal guarantee’ on a national level, the Linking Directive also can be regarded as a global guarantee of the Kyoto Protocol’s ‘flexible mechanisms’, since at that stage, the Kyoto Protocol was not yet taken into force. Therefore, as Butzengeiger and Michaelowa (2004) suggested, the adoption of the Linking Directive and the connection between the EU-ETS market and the global credit market, to certain extent, rescued the Kyoto Protocol. But from the EU perspective, it is also clear that, through the Linking Directive; the EU successfully strengthened or even further increased its involvement and influence in global climate negotiation, both in market and in political domains.

Apart from the tendencies mentioned above, there are at least two advantages of adopting the Linking Directive. These are, primarily, i) providing a level playing field for the sectors in adopting EU-ETS and a relatively steady and also trans-border regulation framework; and ii) reducing cost and the volatility of price and (Perdan and Azapagic, 2011). Moreover, with the help of the Linking Directive connecting the EU emissions trading market to a global credit market, the EU has gone from lagging behind to leading the world in implementing the largest and most comprehensive transnational emissions trading system, i.e. EU-ETS.